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## *Decoration and Art.*

THE French Academy and the Institute are well known all over the world, but the National Library, as a seat of professorships, and an arena of lectures, is not. Nevertheless, it was within those vast and stately walls that, the other day, a controversy of high public interest took place, on the relations between the fine and the decorative arts, and the possibility of their union. This has always been a favourite object of French inquiry. Fifteen years ago, M. Beulé directed attention to it, and put himself upon the proof, historically, of his assertions. Van Eyck, he said, somewhat hyperbolically, was the discoverer of artistic ornament; Raffaelle derived inspiration from the arabesques among the ruined baths of Titus; Poussin reproduced the Aldobandini marriage-symbols; and painters from every country have copied, with a frenzy of enthusiasm, the frescoes of Pompeii, and Ingrés himself had drawn classic groups upon a vase destined only for the decoration of a servants' hall. We have seen how this principle, or sentiment and principle combined, has been acted upon, since exhibitions began in Europe. Often in barbarisms and grotesques,—as of Ethiopian slaves holding forth bronze lamps, piles of Cupids surrounding fountains of immodesty; and the various trash, in the same sense, of nineteenth-century competitions. So far, M. Beulé. The new French Department, representing his views, has just declared itself more broadly upon the point; it says,—we all admire the Greeks, yet we imitate, and do not study them. We copy their types, their costumes, their furniture, even their domestic utensils; and, after all, what is the result? The skin of the lion on the body of the ass! This is a French judgment, with the justice of which we have nothing to do. For the question, as propounded before the professors and students of the National Library, in the Quartier Latin, in Paris, is, whether Apelles and Zeuxis were not decorative painters, after all. There is more seriousness in the problem thus suggested, than, at a first glance, might appear. We will, at any rate, reflect the latest French idea,—of a master of the art and of its critics,—upon the subject. He said, in effect, "You are losing yourself upon vast spaces of canvas, more wintry than winter; or upon athletic figures with well-arranged tunics clinging to them; you are setting little notions in frames which you think worthy of Pompeii; you are playing with toys, and painting for children; and yet you think that decoration is not one of the arts! Now, through all this controversy, which the French Report revives, runs a principle, according to the doctrine of the "Library," to the effect that the art insisted upon shall be either "Mural" or "Monumental." "It is in the combination of these terms," writes a Parisian Commissioner, that the "Decorative" manifests itself. Here is the grand point, so to speak, of disunion. The Fine, historically, it is said, according to modern prejudices, have refused to associate themselves with the Decorative Arts. Well, it may not be easy to judge of results in these matters; but we have some land-marks, at any rate, by which to guide ourselves. The Greeks were masters of art and architecture, yet they dedicated their genius to decoration in a high degree. Their temples and porticoes blazed with colour; they did not study proportions only, but effects, artificially, — perhaps not so artificially,—also, and they enslaved a mathematical knowledge of beauty into their service. We recognise, in the teaching of M. Beulé, something like a principle. It abandons the idea of huge antique, colossal, and monotonous masses; of dreadful contrasts between terrifying light and overwhelming shade; between deep glooms and enamelled open spaces; but all this became familiar, after the Loggia of Raffaelle and the Pompeiian Chambers had been illustrated by learning and by art. The new discoveries were made by those who, in Sicily and Greece, preserved the purest classic traditions. It is not in the new sense propounded, for on that point the latest theories of "The Librarians" will not be accepted without a few "grains of salt." For example, a few years ago, the cry was raised that walls, capable of being painted, were wanted in France. Forthwith, an entire school of wall-painters presented themselves, and a reaction took place, favouring the painting of roofs. Now, all who have sojourned or travelled in France, Belgium, Holland, or Germany, will admit that, in the matter of artistic decoration for public buildings we are very far behind, if not in taste, at at all events in enthusiasm, the general European idea. There is not a town-hall or a court of justice, a police office or public baths, in continental Europe but what has its allegory and its heroic, in crimson and gold. But this is only by the way. In antique times, the plafonds, or hollow roofs of edifices—such as we see now reproduced, in a manner, at Brussels and Amsterdam, were painted, not by artists, but by workmen. Some architectural ornaments ran about the cornices and enlivened the coffers; but an eternal blue tint prevailed, relieved only by golden stars, such as those which, since 1868, have disfigured the vaulted heights of Notre Dame, at Paris. To a later, though scarcely to a less barbarous, period, belong the decorative masters, attempting to carry out the Sicyonian idea of substituting, for simple arabesque, on a blue ground and golden flowers, little figure groups, star clusters, discoveries which melted and lost themselves, as it were, in the spirit of the architecture; and a thousand thoughts of decorative genius, from floor to cupola, which provoked, perhaps, an equal number of controversies. The "Library" is of many opinions on this point. It says,—"A cupola should have no light"; it says, again,—"A cupola should have no shadow." And the masters of the Venetian school reply by asking,—"What has this to do with decoration relatively to the fine arts?" It is impossible to admit any of these prejudices,—we cannot call them theories,—in full. Otherwise, a deep injustice would be done to both the Byzantine and the earlier Italian artists who both wrought upon the idea, prettily expressed by the American poet when he said, "The beautiful should be the bride of the useful." Yet this is not exactly the purpose just now to be kept in view. The greatest of all artists have asked the question,—What is art, if not decorative? What did Julio Romano do except paint a roof at Mantua,—that is, as his masterpiece? In a limited sense, the same might be implied of Michelangelo and Raffaelle. They had to illustrate the signs of the Zodiac, and, in that sense, what were they except decorative painters? The argument is ingenious, if not insulting; but it belongs to the artistic cynicism of the day,—a feeling, by the bye, which may be turned to good or to bad account, as we may please. And here a powerful protest interrupts us. M. Beulé says,—"Nearly all artists, when commissioned to paint a plafond,"—the work, of all others, which the unfortunate Haydon most desired,—"is satisfied to do his work at home; to paint tranquilly in his studio; to imagine what his groups ought to be. He covers his canvas; he sees it nailed up; it may be the Apotheosis of Homer, copied from the Luxembourg; it may be magnificent enough; but it is not the work of a man who has stood upon stool or scaffold, beneath the vaults of Saint Jean de Lateran, old Fontainbleau, or the Palace of Justice at Rennes." Of course, when art is thus associated with decoration, the embarrassment of riches is obvious. The ancients, who had little, except their history and their mythology to fall back upon, did not encounter the same difficulties. Nor should we, who have, in addition, eight centuries of modern history, with all the legends of Judaism and Christianity, to work upon, or from. Socrates, they tell us, only wanted a workman, with a tunic and a suit of sandals, to make any amount of archæology out of. Still, the relation between decoration and art must be sought for, and found, between narrower limits than these. We may even be compelled to omit from our perspective, architecture and poetical painting. It is, indeed, the object of the inquiry, stimulated by so many exhibitions, to invite from down their supreme pinnacles the grandest ideals of art, and ask them to mingle and blend with the tastes and habits of ordinary

life. If it will be believed, there was, at one time, a desperate struggle against the bare notion of association of art with decoration. Shall it be said, exclaimed the Professor of Dresden, that this art, producing a new-born Christ of Corregio, so sublime, that by none can it be seen except by those who stand within the rays of the cradle, must be degraded to the uses of the furniture-maker and the Casino gilder? M. Beulé gave a sensible reply to this somewhat absurd question. He inquired whether there was any value in the decoration of churches and palaces? and whether this principle, of taste and beauty, might not descend through every purpose and propriety of life? It is in snatches that we get the history of art,—in a solitary column; in a lonely vase; just as a rich curtain indicates a luxurious interior, a single tree a forest, a spring a river. No doubt, if we seek for our ideas of art connected with decoration so far, they may be brought home to us. "Colour," insist these last authorities, "is essential to decoration; and nothing is more saddening than works which possess the deadness of sculpture, without its solidity." It may be questioned whether this comprehends the entire question. In the face of the South Kensington colourists are submitted the ochre of Attica and the red of Sinope. These were the two tints of an austere art practised, in its several ways, by Giotto and Masaccio, Michelangelo and Raffaelle; yet they were painters, not decorators, in whose favour M. Beulé pleads. Less than in these can it be imagined that Véronese, Rubens, Romano, Guido, or Poussin sustains the same idea. It is only, in decoration, from the French, that we snatch a thought across the borders of art, that we embroider an idea upon a suggestion. Such is the secret of the charm possessed by us in ancient tapestries, in chinas and enamels of the Renaissance; in crystals and glass-work of the Middle Ages; in Byzantine mosaiques; in the cashmeres of North-Western India; Chinese vases; Persian and Turkish carpets; and Greek and Albanian embroideries. It is half art and half decoration. It means, the Orientals say, an improvisation of use and art combined. The spirit of modern art adds, however, that the two principles are not merely reconcileable, but inseparable.

## "ILLUSTRATED PAPERS ON CHURCH ARCHITECTURE."

THE second number of Mr. Sharpe's serial work under the above title* continues the subject of Cistercian architecture, still in illustration of the general plan of its churches and conventual buildings, which is farther exemplified by a sheet of plans, on a small scale, of twenty-one Cistercian abbeys or churches in France, England, Germany, and Spain. A special point which these plans (reduced from those which accompanied the author's lecture on the subject at the Institute of Architects in 1871) illustrate is the development of the eastern chapels upon a square east end, a simple form of which arrangement is exemplified in the plan of Abbey Dore, and a more complicated and extended development of it in those of Riddagshausen and Ebrach, in Germany. The arrangement of eastern chapels in what has been called the *chevet* form, about an apsidal east end, is, of course, both much more frequent, and, from the recent attention paid to French architecture in England, much more familiarised to most of us. The employment of chapels in connexion with a square east end gives to the exterior design at this point a peculiar aspect, illustrated by the views of the eastern terminations of the three abbeys just referred to. In Abbey Dore the chancel chapels, which occur at the east side only of the chancel, and are marked off from the eastern aisle only by an arcade, are under the same roof-slope as the aisle; but in the two German buildings we have first the lean-to roof of the line of chapels surrounding the chancel on east, south, and north; above and within that the aisle walls, with their lean-to roof; and within that again the main centre compartment of the chancel rising above, with a gable in the usual form. The result is a kind of pyramidal composition, which is very marked and characteristic in its effect, more especially at Riddagshausen, the appearance of which, with its pyramidal grouping and plain pointed windows, presents a kind of mingling of the picturesque and the practical, which is both unusual and impressive. The walls of the north and south chapels extend nearly as far from the centre line of the building as the transepts, against the east walls of which their roofs stop. The interior also, of which an admirable drawing from the author's own hand is lithographed, is of a noble completeness and simplicity of design, and the illustration thus afforded of this not much-known building is in itself enough to make this Number worth the attention of architectural students. The author refers to it as a phase of Cistercian architecture that has been little noticed, and which, in comparison with "the simpler plans of the earlier churches of Fontenay, Montbronn, Fountains, and Kirkstall, or with the description of the earlier church at Clervaulx, built by St. Bernard himself, affords an idea of the rapid progess which Ritualism of this kind had made, even in the Cistercian order itself, during the last half of the twelfth century."

A point just touched upon by the author is the significance of the names of some of the principal Cistercian abbeys, as indicating the motives for choosing the site, and other little suggestions in regard to their history. Thus, in relation to the Abbey of Brombach, we are told that the site was fixed upon on account of the abundance and excellence of the springs (*Brunnen*), of which "Brom," therefore, would seem to be an abbreviation, and "Brombach" to be literally, in English, "Spring-brook." Mr. Sharpe goes on to say, "that we have in this German example a complete parallel as regards the cause of the choice of its site, the derivation of its name, and the preservation of its buildings, to the corresponding examples of nearly contemporaneous date in France and England (*Fontenay* and *Fountains*), is a fact of unusual interest, the importance of which will be more apparent when we come, hereafter, to compare the designs of their buildings and the details of their works." The contrast, one may add, between the carefulness about water-supply, and about sanitary conditions generally for prolonging life, and the placing of the buildings and the framing of the rules of the order, so as to cut off rigorously, as one would suppose, all that could make existence worth having, is very significant of the temper and spirit of a movement which it seems almost impossible to realise, in its actual facts, at the present day.

Mr. Sharpe, it seems, has, however, had an unexpected opportunity of realising it in the course of his archæological explorations; and his account of this is so curious and unusual, and helps so much towards enabling us to fancy what life in these Cistercian buildings actually was, that we must extract the passage. It was when staying at Narbonne, in 1865, that the author, on consulting his Cistercian records, found a note of a monastery founded in 1145, under the name of "Fons frigidus" (again, it will be observed, a name referring to the nature of the water-supply), and having discovered in the Ordnance map the name of "Fontfroide" in the direction indicated, and learning that there were some ruins at that place, set off to pay it a visit.

"Following the high road from Narbonne to La Grasse, which diverging from the Carasonne road, soon enters a barren valley between two low ranges of rocky hills, I arrived, after a drive of an hour and a half, at a point where a by-road to the left enters a pleasant green valley, watered by a small meandering stream, with sloping banks, growing steeper and higher as we advanced; the whole presenting the usual features of a true Cistercian valley. At the distance of about a mile and a half the valley makes a sharp turn, and in the narrow basin thus formed we suddenly came upon a group of grey buildings, of the original destination of which I could entertain no doubt. Whether they were occupied or not seemed to be doubtful, for the heavy double doors of the old gateway were closed, and not a sound came from the buildings themselves; a pretty loud summons on the closed doors, however, was shortly followed by the sound of approaching footsteps; the bars were withdrawn, and there stood before me a Cistercian monk, clad in the identical garments described in p. 12 of part II. of this work. On recovering from the startling effect produced upon me by this apparition, I inquired of the ghost-like figure whether I was right in supposing that this was the Abbey of Fontfroide, and whether, in that case, I might be allowed to see the buildings; the Cistercian—for it was a real monk that I saw before me—silently motioned me to enter, and conducted me to the cloister, where he consigned me to the charge of another monk, who proved to be the Hotelier (*Hospitalis, Hospitalarius*), the only monk, beside the Abbot, to whom the privilege of speech was allowed. It appears that a French land-owner, some years ago, purchased the ruins of this ancient convent, and refounded it for the use of such inmates of the Bernardine monasteries of the high Alps as were unable any longer, from failing health or increasing years, to sustain the rigours of the climate of those elevated regions.

"At the time of my visit there were eighteen or twenty monks in the convent; they had repaired the church and some of the conventual buildings, and contrived to raise on the land attached to the abbey sufficient to support life. They were evidently in the greatest state of poverty, and living in the complete realisation of that life of self-denial and severity contemplated by the founders of the order, and practised in the twelfth century. I enjoyed their simple hospitality for two days, and was permitted to visit and to draw the different buildings and the church when and as I pleased. It was a singular existence. Not a footfall was heard in the buildings, for the monks wore sandals; and it was somewhat startling, when in the cloisters, or the chapter-house, you fancied yourself alone, to find, on turning round, one of these voiceless, Mediæval, white-robed figures at your elbow. The only sound that disturbed the deep stillness of the place was that of the voices of the monks as they chanted, five times during the day, their orisons in the church."

Few real experiences could have seemed more like a dream, we should imagine. Fontfroide monastery possessed some peculiarities of plan, in the existence of an apse to one of the eastern chapels of each transept, as well as the principal apse of the chancel; and in having (which is very unusual) the conventual buildings on the north side of the church instead of on the south.

The subject of the process of construction, or of the thinking out of the construction, of Mediæval buildings, receives some special illustration in the present number of Mr. Sharpe's work; he endeavours to give more emphasis to the idea which has been a good deal mooted lately (and which we rather believe he was the first to suggest), that the Mediæval vaulted buildings were designed rather from above than from below, the arrangement of the vaulting, and the plan of the upper portion immediately connected with it, being determined upon, and the substructure planned and designed with this end in view. The idea that the plan of the Mediæval transeptal churches was really designed with a symbolical meaning, and did not arise merely from constructive influences (a theory which has been sometimes questioned) receives at least very strong confirmation from the sentence which the author quotes from a "Ritulum Cisterciense," published at Paris in 1721:—"Omnes ecclesiæ ordinis nostri in honorem beatæ Mariæ dedicatæ sunt, et fere in modum crucis constructæ, instar ecclesiæ Cisterciensis omnium matris"; and although we are not told positively the date to which this injunction is to be traced back, it certainly infers a tradition to the effect suggested. The manner in which this injunction is carried out in Cistercian churches affords, in the author's opinion, a convincing proof of this theory, that the whole building was designed with reference to the upper portion. If we examine the ground-plans of Cistercian churches, we find the cross form often very much broken up, and sometimes rendered little recognisable amid the greater or less complication of the ground-plan. But take the plan above the triforium and in reference to the upper walls only, and the symmetrical form of the Latin cross is apparent in almost every one of them. The block plans of fifteen out of the twenty-one churches illustrated, above the aisle-roofs, are given on Plate III., and all show a complete and symmetrical Latin cross, of not very differing proportions; a few only of the plans having the arms of the cross decidedly longer in comparison to the stem than the others. This way of contemplating the plan is at least rather new, and may suggest something as to the principles which governed the planning of the buildings. In its bearing upon the conclusion derived from it, however, it must not be pushed too far. We doubt whether it is possible really to arrive with certainty at a clear idea of the method in design of the Mediæval architect, or the manner in which his problem suggested itself to his mind. But every suggestion on the subject is interest-

* Illustrated Papers on Church Architecture. By Edmund Sharpe, M.A., F.R.I.B.A. "No. II. Cistercian Architecture. Part I., General Plan (continued)." London and New York: E. & F. N. Spon.

ing. The present number of Mr. Sharpe's publication is, in short, a very good one, with much of what is of special interest in it. We regret again, however, to see drawings (the exterior views of Abbey Dore, and of the two German abbeys before referred to), which in execution and style are very inferior to what used always to be connected with Mr. Sharpe's name. The two interior views of Abbey Dore and Riddagshausen, which bear the author's own signature, afford a marked contrast to the exterior views.

## HEALTHY HABITATIONS.*

WE are told upon the best authority that there occurs annually in this country upwards of 4½ millions of cases of preventible sickness, and that 125,000 persons are prematurely cut off every year from a neglect of sanitary precautions. We are accustomed to consider that the house is to blame for this desperate state of things, and the case is certainly a strong one. We dress in the morning, and unsuspectingly don linen washed, dried, and ironed in the home of a laundress, the inmates of whose non-disinfected household have been stricken down with fever. Or the contagious matter may have been imported in the woollen interstices of a coat shapen and sewn by an out-working tailor whose seat-board was within the length of a rose-tree from some one whom fever is fast hailing to the silent land. We then breakfast, and if we escape enteric poison in the milk-jug it is entirely owing to the cleanly surroundings of the farm or dairy. The meal over, the post may bring us some infection in a newspaper, not one newly radiant from the press, but fresh from a friend whose house is under a fever-cloud, as was the case the other day, when the virus of scarlatina was conveyed from far Inverness to Exmouth. The Nemesis of uncleanness follows the innocent traveller, too, for "mine hostess of the inn" has perhaps permitted him to sleep in a bed last occupied by one who had just sickened or who had insufficiently recovered from some ailment. Even if the bed be without reproach, his slumber may not have given him corresponding relaxation, and draughts from the window or chimney may have induced a violent cold just when the greatest radiation from his skin prevailed, and he was powerless to avert it. Or the faint night breeze may be loaded with the invisible horrors of sewer-gas, which we all know very well is not an imaginary case.

Alas for the very poor, whom we shall have always with us, how do they suffer from domiciliary uncleanness! They risk the eating of cheap, unfit food, and the drinking of putrid water, we know; but they may also sleep upon beds made up of shredded rags which the dealers have collected from the marine stores and town dust-yards, innocent of cleansing or disinfection. Their wearing material is sometimes also just the shoddy made up of woollen rag flocks, from no one knows where, or they may have been purchased in the clothes-exchange of some rag-fair, and stored with germs only lacking an opportunity for mischief. A late outbreak of scarlatina in Hereford was traced to an old-clothes shop of this description. The furniture, also, of the poor classes is as likely as not purchased at an auction, the sale of which, fresh from an infected house, was not arrested by the health officer, as was a late sale at Sydenham. Nor do the poor suffer alone; they perforce communicate it to those around them. During the present year at Chippenham, the pew-cleaner bore infection into a family pew. The saddest case I know of occurred also this year at Leeds, where typhus was carried with some infected articles into a pawnbroker's house, and with fatal results. Sanitarians must aim at improving the dwellings of the poor first of all, and the hands of the health inspectors ought to be strengthened, so that they may not only seek out, but promptly remove the engendering evils. As fast as a crocodile's egg is discovered an ichneumon should be let loose upon it. The medical officer of health and his inspectors are here the masters of the situation, or rather should be, not the magistrate and his Admirables of the Blue. Perhaps, however, some day the police will get tired of so much hunting up of cases for the Board school, and will supplement a fair share of that by furnishing a list of sanitary delinquencies to the proper authorities.

The first chief consideration when about to erect a house is that of procuring a suitable site. In cities we have little choice except that of avoiding the neighbourhood of rank nuisances, such as slaughter-houses or gas-works. But it would, perhaps, be better to have built there the town residence rather than upon the more aristocratic site, since the foundations would have, it may be, to be built in trenches dug out of soft core. The labouring man suffers exactly in the same way, with this enhancement of evil, that in his case the house may be built up for the most part of old materials sold with the site, bricks sodden with the impurities of a century, and put together with mortar manufactured out of filth-saturated plaster. If the history of the 129,000 houses which have been erected during the last ten years in London were accurately known, some desperate revelations might be expected, and a great deal of metropolitan sickness accounted for. We ought, as has been said, to have a due knowledge of the amount of population in each street of every city within the land, and thus be able to detect unhealthy areas by separating the cases of zymotic diseases from other seizures. By this means the causes of filth diseases might be rooted out. The late Dr. Ross pointed out a street in St. Giles's district, London, in which there was in the course of each year a death in every house. In the neighbourhood of a square in the same district the mortality was only one in forty-one houses. Not density, and not overcrowding, however, caused the fatality in the street named, but defects of construction and arrangement in the houses, and, above all, dirt inconceivable.

I have heard it repeatedly remarked that the mansions of the good old times were invariably built upon exceptionally good spots, and with which no fault could be found. This may be true of most abbeys and priories, the sites of which were chosen by conclaves of wise men, but is not true if predicted of many old mansions; since I have frequently seen these, though commanding the finest views, abandoned to the owl, and new residences built at some distance, because of the healthiness of the fresh site. If our forefathers erred, however, occasionally, we err very frequently indeed. I could point out houses, dwelt in by patricians of our own land, the subsoil of which is continually—in flood-time or dry harvest—charged with the water of adjacent streams or lakes, the water having actually to be pumped out of the cellars at stated times. Many modern mansions have I met, too, which had been erected as if in the bottom of a saucer of water-bearing rocks, and which are never dry.

When houses are built upon alluvial soil and the subsoil water lies close to the surface, the advent of malarious diseases may be regarded as a certainty. Paroxysmal fevers have also been traced to the digging up of the wide gravel walks in the gardens of houses unprovided with a subsoil drainage. A great deal has lately been said of the fevers due to the disturbance of the soil in Rome, and many experiments upon the ground-air have been made at home and upon the Continent. It is necessary that such experiments be made, for a medical man has lately related how, in Carlisle, he suffered for nine weeks from a fever due to the disturbance of the soil in the neighbourhood for the purpose of levelling a building site and constructing a new road on the estate. The prevailing winds must also be taken into account, for where the house has been erected regardless of proximous fens or marshes, and there are many even in crowded England, the malarial factors are many and intense. And, apart from all this, houses are sometimes rendered unbearable through standing open-mouthed in the way of winds blown from dry sewage outfalls and supersaturated lands. I know a nobleman's house one wing of which is made most uncomfortable during certain winds by chemical works fully three miles distant. To a very serious degree, indeed, do dwellers in manufacturing cities and towns suffer when the noisome works are crowded in amongst the dwellings. These manufacturing vapours, during northerly and easterly winds especially, increase the local death-rates enormously. In Glasgow, when such vapours are condensed in fogs, the poorer districts, well open to their influence, have suffered a mortality of over 65 per 1,000, as against 19 to 36 per 1,000 in the better parts of the city at the same time. If there stands a sufficient reason for the weeding out of too closely congregated public-houses on the score of morality, a much greater necessity obtains for the better isolation of these unhealthy factories. And just as intramural burying-grounds have been banished to the suburbs, so should these atmosphere-poisoning laboratories be gradually moved on to the outlying districts, even should a workmen's railway follow each of them.

It is customary with us to condemn the erection of a residence upon clayey soils, and to praise gravelly ones, but the choice is not always a happy one. True, drift gravels may be free from sinister imputations, and so may deep permeable gravels and deep sandy soils, such as our Bagshots; for there the chance is that the many escaping wastes from our dwellings may filter harmlessly away. But shallow gravels, and gravels of mere river origin, if these rest upon non-absorbent rocks, are to be suspected, inasmuch as the wastes which sink through them would anon reach the surface again. There is no natural surface-drainage possible in such cases, and the adjective well-poisoning is also here well applied. Now, upon a clay soil—and cholera flies a clay soil—it has been remarked, all this evil can be avoided; the foundations can be built upon concrete, and even the whole basement, whilst the wastes can be drawn without fear of soakages. As a rule, all house sites should be drained just as fields are drained, and below even the concreting.

The greatest care should therefore be exercised in making a proper choice of a site. If the district be very damp and marshy, the influence of miasmas cannot, I think, be averted by any amount of gum-tree or sunflower planting, however much moisture these may dispose of, and Dutch experiments on clean-water ditches to the contrary notwithstanding. They cannot be reckoned to counteract the evils of a subsoil continuously fed with impure liquids. It has been said that it is in the power of floriculture to conquer a whole district from deadly malaria by covering it with aromatic vegetation, and the inspired writer may have had this in his mind when he spoke of the desert blossoming as a rose; but powerful as is the peculiarity of certain flowering plants to produce ozone, on exposure to the sun's rays, they could have but little effect upon the surroundings of a house which can only be drained in the subsoil upon which it immediately rests.

A word or two as to the prospect and aspect of a house, and the necessity of this has been carefully elaborated by Professor Kerr. The prospect may be chosen with the view to making the most of the scenery. As regards aspect, the north is best allotted to the dining-room, as the twilight lasts longest there, and the staircases are also best when arranged upon this side of the house, being always cool. For the larder and dairy this aspect is unexceptionably good. The bedrooms will be found most comfortable when facing the north-east, as they get a pleasant morning sun, and are correspondingly cool at night. The east is suitable for the breakfast-room, morning, and library, but not for the drawing-room, because of the east winds and lack of afternoon sunshine. In the south-east may be placed the reception and best rooms, and for a sick room this aspect is not to be surpassed for fitness. The south is unsuited for the dining-room windows, except there be a good verandah; and as for the south-west, it is the worst aspect of all, and unpleasantly hot for bed-rooms. Neither is the west to be purposely chosen for bedrooms, or even for a dining-room; it is suitable, however, for the smoking-room and for one side of the conservatory. The north-west is suitable for an evening-room if fitted with good blinds. To conclude, the east aspect is dry, but sometimes subject to bitter winds, which planting may obviate. The south-east is also dry and the winds mild, whilst the south is eminently sultry. The worst aspects are the south-west, with its frequent rains and boisterous winds; the west, with its rain and undue warmth; and the north, with its prevailing coldness.

It may be said that this care as to the aspect is mere sumptuousness, but not so. Even in the case of a labourer's cottage in the country, when there was the whole welkin to choose from, how often do we see a senseless choice made,—just as we see a senseless choice made with villas when aspect has been ruthlessly sacrificed for prospect's sake. The bed-rooms of the farm labourer's family may look out on the north or south-west, the kitchen faces the west, the dairy the south, and the privy, dust-midden, and piggery dung-pit are all clustered together where the sunbeams most do congregate, instead of the north. I have no practical remark to make upon this part of my theme, except to lament that intending investors do not oftener have recourse to models before they transmute their money into bricks and mortar. This precaution

* By Mr. W. Eassie, C.E., delivered before the National Health Society, London, June 21, 1876; Mr. G. Godwin in the chair.

would cost little more than 1 per cent. on the outlay, and would save much heartburning. It is only what every good engineer does before he builds a bridge or constructs the simplest piece of machinery.

But to approach the house closer, ceasing, however, the alternate harpings upon rich and poor residences, and choosing a building of moderate pretensions as a representative erection. As we near it we diagnose immediately and safely as to its healthy condition. If a damp one, it carries intemperance upon its face; its walls are dun-coloured in patches, due to dampness in the walls, a dampness which can be traced up outside at times to the first floor. The wet yards speak gushingly of water hidden below the pavement, and which cannot run its allotted course to the nearest brook. Once inside, we notice the damp basement floors which not the coal-wasting kitchen fire can recover to normal dryness; and in the more neglected rooms of the same floor it would seem as if they were intended for the production of newts and frogs. This is no overcharged picture, and is as bad many times when there is no cellar accommodation. The ensteepment of the house is moreover traceable elsewhere than in the ground-floor, in the cupboards of which, by the way, mouldiness grows upon the boots almost in a night's time; for in the library upstairs a mildew prevails, making limpid the rare leather bindings; and the sense of mustiness is ever present, even in the bedrooms. It is as if a premium had been held out to shiverings, rheums, and agues. Only last week I visited an ancestral hall in Lincolnshire, and found out just such a state of things in a new wing which had been built about a year. The painters of a noted West-end firm were busy coating the walls with oil paint, and nearly as fast as the coats were put on the water rose up the walls and bulged out the paint into blisters, resembling those generated by a severe burn, and needing, in similar fashion, only the prick of a knife to liberate the water.

The state of things in this mansion was simply due to building the foundations without concrete underneath, and without any damp-course to intercept the rising wet. Had the site been drained, even, it would have been less of a blunder. Dampness in houses is often traceable to having laid the stone, tile, or brick paving upon the damp earth, one consequence of which may be that the floor will perhaps be lifted up out of its place by underside growths. Under every circumstance a bed of concrete should sublie all paving. Another cause of humidity in the house is due to the banking up of damp earth against the walls, and the non-provision of an area wall. The latter, like virtue, is indispensable, and the contractor who provides it when the designer of the house has omitted to specify it is worthy of the Order of the Pope's Silver Rose, if he has more than the "Golden" one. I would say to the builder—Put it in, even should you never get paid for it; for, depend upon it, if you do not the residence will always be cited against you as a badly built one, and your balance due will be escheated, which may cause you a sweating sickness in the bank parlour. I may also here add, that the moistness due to the nonplacement of a damp-proof course can alone be remedied by cutting out the wall and inserting one above ground-level line. No damp-proof paints can long withstand the enemy behind, which, when it ceases its legitimate march through the wall, only begins to crumble away at the wall material behind. True, it can be hidden from the eye by boarded linings, but the truce is only for a time.*

## YORKSHIRE ARCHITECTURAL SOCIETY.

On the 21st of June this society made an excursion to the neighbourhood of Guisbro'. Immediately on reaching Middlesbrough, the party set out for Acklam Church, where a short paper was read on the effigy of a lady, supposed to be Margaret Conyers, the wife of Sir Thomas Boyton, who died in 1402. Thence they proceeded to Marton Church, which was partially restored in 1843, under the superintendence of an amateur architect, Mr. J. B. Rudd, of Tollesby Hall, Marton. Leaving this, the members, following the guidance of the Rev. C. Baillie, the rector, went to Marton Hall, the residence of Mr. H. W. F. Bolckow, M.P., who had kindly invited them to view the pictures there. The extensive collection contains masterpieces of Landseer, Rosa Bonheur, and others. After spending nearly an hour at the Hall, the party was compelled to hurry away and get to Great Ayton as soon as possible. Here are two churches, one just finished from the designs of Mr. Ross, of Darlington, and the other a Norman fabric, which is only used occasionally. This was examined at length by the members. The next stopping-place was the small Norman Church at Newton. The font, of Transitional Norman work, from Ingleby, Arncliffe, memorial cross slabs, gable crosses, the Norman door on the north side, and especially a very old sculptured stone now built into an out-house adjoining the church, successively formed subjects of discussion. Upon reaching Guisbrough the members went into the church to see the remains of the beautiful Bruce tomb, the new font, and the fine old plate belonging to the church. They next went into the grounds of Admiral Chaloner, to see the ruins of Guisborough Priory. A short paper was read upon the salient points of the ruins, and then a rapid investigation took place.

* To be continued.

## CHAMBERS & CO.'S ARCHIMEDEAN BRICK MACHINE, PHILADELPHIA.

This machine belongs to the class known as "*tempered-clay machines*," or "clay-tempering brick-making machines," and was invented by the junior member of the firm, Cyrus Chambers, junior.

The machine is constructed almost wholly of iron, and is made very strong and durable. It *tempers its own clay with water*, taking the clay as it comes from the bank, without any *previous handling or preparation*, and forms it into bricks, with well-defined corners, and smooth, straight surfaces, at the rate of from fifty to eighty per minute, or from twenty-five to thirty-five thousand per day of ten hours. The clay is taken direct from the bank and dumped at the side of a conical funnel that leads into the tempering case of the machine, and mixed, when necessary, with *loam, sand, or coal*, the requisite amount of *water* being added to temper the clay to the proper consistency; the mass is shovelled into the hopper and falls into the machine.

The tempering portion of the machine consists of a strong iron case, in which revolves a horizontal shaft, into which are set spirally, strong tempering knives, or blades of steel, so that, as they pass through the clay, they move it forward. The clay being stiff, and not having much water on it, is not liable to *slip* before the knives, but is cut through and through, and *thoroughly* mixed; so that by the time it reaches the small end of the tempering case it is ready to be formed into bricks. On the end of the tempering shaft is secured a conical screw, which revolves in a cast-iron conical case, the inside of which is ribbed, lengthwise, so as to prevent the clay from revolving in it, and is chilled, to prevent wearing. The screw being *smooth* and very hard, the clay slides on the screws, thus becoming, as it were, a *nut*; the screw revolving, and not being allowed to move backward, the clay *must* go forward. This operation further tempers the clay, and delivers it, in a solid, round column, to the *forming die*, which is of peculiar construction and form, and so designed as to reduce the round column to a rectangular one, whose breadth and thickness is the *proper breadth* and *thickness* for a brick, while at the same time it *forces the clay into the corners* of the square or rectangular, finishing part of the die, so that the angles of the bar of clay are made very solid and sharp, thus insuring perfectly square and well-defined corners to the bricks. This bar, as it issues from the die, is conducted by a plate to the cutting device, which consists of a thin blade of steel, secured to the periphery of a wheel, in the form of a spiral, the distance between the blades of which is that required for the length of a brick. This spiral knife runs perpendicularly, in an endless chain, which supports the bar of clay at one edge and bottom, so that the blade in passing through the clay is supported, thus insuring the angles unbroken, and the cutting smooth and square.

The distance between the spiral blades being uniform, the lengths of the brick are absolutely uniform, thus overcoming the great practical objection hitherto existing in the Chambers machine. The drawing cut of the spiral cuts the end of the bricks perfectly smooth, thus correcting another defect hitherto existing in this class of machines.

The speed of this spiral cutting blade is controlled by the clay itself; hence no matter how irregular the flow of clay, the spiral runs in exact unison therewith; consequently, the absolute uniformity in the length of the bricks. This controlling of the speed of the spiral by the clay is so positive with that of the clay that it will run at any speed from one to one hundred bricks per minute, while the machine runs at full speed. These cutting and regulating features are the new parts, and overcome the old valid objection heretofore urged against this machine as now introduced.

The bricks, thus cut from the continuous bar, are separated and carried by another endless belt through the dusting or sanding machine, which consists of a chamber, into which is thrown, by centrifugal force or a blast of air or steam, a continuous cloud of dust or fine sand, which adheres to the surface of the bricks, rendering them much nicer to handle, preventing them from sticking together on the barrows, or in the hacks on the *drying cars*, and much improving them in colour when burnt.

All brick clays have more or fewer stones in them, and as it is impracticable to pick them *all* out, there is a necessity for making some provision for them, and this is done.

## PROFESSIONAL PRACTICE IN AMERICA.

A case of professional practice has just come before the Chicago Chapter of the American Institute, and the *American Architect* gives the following particulars:—

Mr. Cochrane, one of the members of the Chapter, had been employed by the county to design the County Hospital, and after having furnished the necessary drawings and tracings for the work, was requested by two of the contractors in the work to supply them each a set of the general drawings in addition. This he did, charging them each $200 for the drawings, a price which he thinks brought him no profit. In a report of the grand jury this charge was referred to as matter of reproach against Mr. Cochrane, who then laid the question before the Chapter, and requested their opinion whether the charge was an honourable one, and also whether there should be a limit to the amount of work which could be required from an architect. The questions were referred to a special committee, Messrs. Cleveland, Bauer, and Wight. The committee, reporting on the subject, quote the fourth article of the Constitution of the Institute, which, after saying that the condition of membership shall be the honourable practice of the profession, adds that "no member shall accept direct or indirect compensation for service rendered in the practice of his profession, other than the fees received from his client." They say that in this case Mr. Cochrane's client was the County Board, and that the mechanics to whom he furnished the drawings were only contractors, and they consider Mr. Cochrane's acceptance of money from them an indiscretion.

With regard to professional usage in such a case, the committee call attention to the fact that the former custom of architects in charging contractors for working-drawings furnished them has been out of date for at least fifteen years (we doubt if it has prevailed at the East within a much longer period), and that it is the custom among architects at this day to furnish all the drawings that are needed, and even extra ones, without added compensation; they holding that to receive money from a contractor is likely to create suspicion, and wishing to carefully preserve their independence. The question, whether a limit is to be set to the work required from architects, they defer to the Chapter for future consideration. The committee exonerate the transaction of any dishonourable character, in view of the entirely open and business-like manner in which the thing was done.

**Building Loans in Carlisle.**—The various building societies of the Carlisle district have issued their reports. In the course of the year the Fisher-street Society have advanced no less than 105,245*l.* in loans, being twice as much as they lent in 1874, and nearly three times as much as in 1873. The deposits in the same period were 155,271*l.* The number of members is 4,445. From the report of the Enterprise Permanent Benefit Building Society, we learn that 49,537*l.* have been advanced on loan during the year. The Carlisle and Cumberland, and other societies, have also done a much larger business than usual.

## THE PRINCE OF WALES'S LOAN EXHIBITION.

THE extensive collection of presents brought home by the Prince from India is now open to the inspection of the public in some of the galleries in connexion with the India Museum in Exhibition-road. The collection is a very rich and, considering the mode and time in which it has been got together, a very extensive one, and is sure to prove of much interest to general visitors, though there is nothing new in it for those who are acquainted with Indian ornamental art.

The collection includes a considerable amount of very rich, and some very beautiful, gold and silver work. A centre ornament of silver, of almost flower-like delicacy and fragility, in one of the cases, is an object of general admiration: a silver tea service, in much more massive style, has more of the traces of European feeling and taste, by which its designer has evidently been influenced. On the other hand, there is evidence in the collection that the silversmith's art has been progressive in India in modern times; for some silver articles labelled "seventeenth century" are in a much more commonplace and less fanciful style than the best of the contemporary work. The habit of bringing into use the natural products of the country, either in form or substance, as features of its art, is a good deal exemplified. A couple of egg-stands are made from ostriches' eggs, silver-mounted, cut across, and one portion made to open as a hinged lid. Cocoa-nuts are carved into elaborated open work with minute and delicate surface ornament, and mounted and hinged in the same fashion. Elephants in one form or another abound, in stone, in marble, in brass, in agate, &c.,—some of them tolerably realistic representations, others conventionalised into mere approximate memoranda of elephants. The spirit and force of many of these, which seem in most cases to be mere ornament, is remarkable.

The collection of weapons includes some of the most interesting and richest work in the exhibition; many of the scabbards, especially, being studies of rich and perfectly tasteful decoration. A state elephant howdah does more, perhaps, to realise the idea of the gorgeous effect of an Eastern *fête* than even the graphic pencils of our newspaper illustrators can convey to us. An ivory palanquin, covered with fret ornament, attracts a good deal of attention; but is more remarkable, in our eyes, for richness and elaboration than for excellence or suitability of ornament in an artistic point of view. It suggests the idea that a palanquin must be a very comfortable and luxurious conveyance, for a person of small proportions. The delicate nature of the Indian physique is indicated in other things in the collection; among the arms, for instance, where we see big swords, some of them of formidable length and weight of blade, with a hilt which most average-sized Englishmen would find too small for their hand to wield with any comfort. Some good and characteristic specimens of ivory carving on a small scale are to be seen; a fair display of jewelry and personal ornaments of various kinds, and some rich gold lace and other stuffs. Hookahs are in great force,—hookahs of a size and magnificence to be marvelled at. Among other miscellaneous objects we came upon a couple of handles of carved ivory about 15 in. long, ending each in a hand (about quarter-size), with the fingers partially extended and bent downwards, and cut nearly to a point at the end. These implements of Oriental civilisation are described on the card affixed as "ivory back-scratchers." Possibly that may be considered, at all events, an improvement on the post which the inhabitants of a certain portion of Great Britain used to be supposed to carry about with them, according to the delicate satire of a previous generation.

Though, as we observed, there is nothing particular to be learned in the way of Indian art from the Prince's collection, there are plenty of things that are worth looking at, and which appear to be considered so by a large crowd of visitors.

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**Workmen at St. Paul's Cathedral.**—On the 23rd ult., Mr. Joseph Wilkinson (clerk of works), on his leaving St. Paul's Cathedral to undertake work in the country, was presented with a testimonial from the working staff of the fabric, consisting of an ivory rule with silver fittings, four volumes of "Cassell's Technical Educator," and an illuminated address in a carved oak frame.

## LAMBETH FAÏENCE.

THE collection of art pottery from Messrs. Doulton's works at Lambeth, on view at Messrs. Howell & James's, is a very gratifying reminder that there is really good and original work of this kind, both as regards design and execution, carried out among us at the present day. The collection, which is the second annual one that has been made, comprises two classes of work, faïence and stoneware. In the former work we are struck with the rich and harmonious character of the colouring, as well as the grace and originality of a good deal of the design, which occupies in character a mean position, for the most part, between the irregularity of the Japanese types of ornament and the too mechanical and exact symmetry which distinguishes a good deal of modern work of this kind, especially French. A small collection of recent French work occupies part of the same room in which the Lambeth work is collected, and a comparison of the two is not a bad lesson in the qualities which separate artistic effect and character from mere commonplace prettiness in this class of production. In the French work the colouring is far inferior in depth of tone to that of the Lambeth productions; it is hard and raw in comparison; the shape and surface of the vases are finished with a finical neatness which deprives them of richness of texture; gilding is occasionally applied,—a source of effect quite out of keeping with pottery art, and which always results in giving a more or less tawdry effect. In the Lambeth work there is little of attempt at rigid and precise symmetry; some of the designs are studiously devoid of symmetrical arrangement (and this is the character of some of the best among them), but in the main there is freedom without carelessness in the details of the designs, which are largely founded on floral types; and the forms of the various vases, plates, and other articles are in almost all cases good. One special merit, however, which all this ware possesses is, that there is an absence of that endeavour after excessive smoothness and hardness of line and finish which is not the natural character of earthenware, and the attainment of which, in reality, only means the obliterating of the real character of the material and of the design expressed in it. This portion of the collection includes, we may observe, four of those little alto-relievo subjects by Mr. Tinworth, four others of which are in the Royal Academy vestibule, and were noticed by us in some recent comments on the sculpture at the Academy.

It is in the "stoneware" productions that we think the Lambeth pottery is even more original and successful than in the faïence. A style has been adopted in this class of work which gives a great deal of richness and variety of surface, while preserving the true character of earthenware: the design showing, in fact, its process of manufacture almost on the face of it. Part of the work consists of designs etched by incising on the surface of the clay before it has received its final hardening, the incised lines being then filled with a greyish tint; this process gives the opportunity of drawing and designing in a very free style on the surface of a vase, without in any way transgressing the limits imposed by the nature of the material. The purely ornamental portions of the work are in tolerably sharp relief, the employment of serrated and ridged lines to mark out the principal sections of the design being a favourite device, producing a great deal of glitter and richness of surface. The colouring of this class of work is mostly exceedingly good, and, in its own way, quite equal, as an accessory to the decorative effect of a room, to much of the Japanese enamel which is so much sought after, and which, of course, is a more delicate and elaborate kind of production, but is in reality rather work for minute inspection than for decorative effect. The stoneware is chiefly exhibited in the form of vases for flowers, &c., of various sizes. Smaller articles are, however, made in it. We noticed in the collection such things as salt-cellars, and a small stoneware tea-service, not including, however, cups and saucers, for which it is considered the material is not light enough in bulk and appearance; but we can see no reason why it should not be used for such a purpose. There is rather a taste at present for excessive fragility in the furniture of the tea-tray; but an opposite taste may be consulted also.

The picture-work, as we may call it, in the collection, where large dishes are made the ground for paintings of heads, or of figure subjects, is well executed; but we do not so much sympathise with this kind of design in such a material, which is ill-qualified to do justice to it. But the bulk of the collection is excellent work, and shows a spirit both in design and execution such as it is generally the custom to say is not existent in modern ornamental work at all, and which is certainly but rarely found.

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## PUBLIC IMPROVEMENTS IN HAVRE.

AN attempt is being made to place the "Haven of Grace" in the position which its natural situation at the mouth of the metropolitan river of France has failed to secure for it,—that of an attractive watering-place. Trouville, Deauville, and other smaller towns along the coast have risen in popularity, and large sums have been lavished in improving them and rendering them attractive to visitors, but Havre has hitherto been left in the cold, and neglected. In a recent report, Consul Bernal states that the new law courts, on the Boulevard de Strasburg, are approaching completion. "Whatever," he says, "may be the success of their internal arrangements and accommodation, they are, in an architectural point of view, a failure. Heavy in design and wanting in elevation, it is very strange that they should be the outcome of a public competition. The town of Havre is, however, in no way responsible for them, Rouen and its authorities being, under the system of departmental government, the arbiters in such matters."

New houses continue to be built, and, though trade is dull, and "hard times are come again," rents are high. One great improvement which is now projected is the formation of a marine boulevard, a plan of which has been submitted by the Mayor to the Town Council. The project comprises a boulevard along the sea-shore, about 2,100 yards in length and 27 yards wide, extending from the pier to the suburb of Sainte Adresse. The estimated cost is 280,000*l*. There is no doubt that such a work would place the claims of Havre in the front rank as a fashionable watering-place, and would soon repay the outlay in the increased popularity of the town.

An English Episcopal Church, opened last year, is one of the principal ornamental additions to the town, but a debt on the building has prevented its completion, and the spire has not been erected. The exterior of the edifice is as pretty as that of any English church on the Continent; but the internal accommodation is bad, and the best use is not made of the limited space available.

The population of Havre is only about 87,000, but the trade is of considerable importance. Indeed, it claims to be "the second commercial port of France." Among the steamers built and launched here in 1875, are two, built for the London, Brighton, and South Coast Railway. "This apparently singular circumstance," says Mr. Bernal, "is accounted for by the fact of the Western Railway Company of France being co-proprietors of this line of steamers, which run between Dieppe and Newhaven." This fact only seems to partially account for the circumstance that steamers are built in France for an English company. It is, in our judgment, only another proof of the injury which is being done to English trade by the foreign competition which "strikes" in our own country do so much to foster, and this view is borne out by the following general remarks with which the report closes:—"With labouring classes who are sober (on the whole), thrifty, endowed with taste, accustomed to cheap amusements, of domestic habits, and comparatively free from the two-edged weapon of strikes, the French employers are in many respects better off than their British compeers. Were it possible for France to enjoy for ten years perfect political quiet, as well as the self-government which England possesses, she would attain to a fabulous height of national wealth and greatness."

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**Death of a Great Ironmaster.**—Mr. James Baird, of Cambusdoon, the well-known millionaire and ironmaster, who recently gave 500,000*l*. to the Church of Scotland, died at his residence, Cambusdoon, near Ayr, on the 20th ult. It may be said that by the energy and enterprise of his firm the Scotch iron trade was created. Glasgow and the surrounding districts owe much of their prosperity to him and his brothers.

## BYZANTINE ARCHITECTURE AND THE ARCHITECTURE OF LA CHARENTE.

ARCHITECTURAL ASSOCIATION EXCURSION, 1875.

On the 13th ult. Mr. Edmund Sharpe lectured in the large hall of the Co-operative Institute, Castle-street East, Oxford-street, on "The Architecture of La Charente," giving some account of the buildings of the district visited by the Architectural Association during the 1875 excursion. The lecture was illustrated by a very large number of drawings specially prepared from the measured and other sketches of buildings, and their ornamentation, made during the excursion.

Mr. Sharpe said,—In the year of our Lord 540 there was to be seen rising in the eastern metropolis of the Roman Empire a building the like of which had till then never been seen. It was a Christian church, dedicated to Divine Wisdom, as the term literally interpreted signifies. A contemporaneous writer explains that this appellation was so used as expressing the chief attribute of the Godhead; but Rupertus, in his "De Divino Officio," cap. xv., lib. 10, interprets the term ἡ ἁγία Σοφία to mean what is understood by "The Word of God,"—i.e., the Son of God. In this sense the dedication would be equivalent to that of a Roman Catholic church in Manchester, which is denominated "The Church of the Holy Name," or to that of numerous English churches that are called St. Saviour's or Christ Church.

The church of St. Sophia, however, which Justinian began to build in Constantinople in the year 532, was not the first church of that name in the city; it was a reconstruction of an earlier church built by Constantine the Great under this title which was burnt, together with others, in the rebellion called Νίκη against Justinian in the early part of that century. But the restored church, like many restorations of the present day, was nothing like its predecessor. Of this we have the most convincing proof in two different accounts of the building written soon after its completion by two persons who were both of them eye-witnesses of its construction, the one being Procopius, the historian and panegyrist of Justinian, who wrote the history of his wars, his acts, and his buildings; and the other being an anonymous author, who, in all probability, had been employed in some capacity in the building itself,—the one is the description of an amateur, the other that of an architect; both, however, coincide in describing the building as unique, and unlike anything that had previously been constructed. The amateur describes the unusual character of this new and wonderful building in terms which, whilst they graphically portray the general effect of its novel and striking features on his senses and imagination, leave no room to doubt that the building which he thus saw and thus described was the actual building which still exists at Constantinople. The other writer, on the other hand, occupies himself with all the detail of the structure; he records the preparation and the arrival of the material, the purchase of the necessary site, and the contrivances and expedients that were resorted to for persuading or compelling unwilling sellers to cede their land and houses,—he even gives their names and callings; he deals with the practical difficulties of the construction,—the composition of the mortar, the working and preparation of the stone, the failures of the work, and the remedies provided, with all the technical knowledge of a professional man. Altogether, these two documents are, I think, without any exception, the most interesting records of the construction and completion of a building, by contemporaneous writers, that it was ever my fortune to examine; and when we reflect that they are the descriptions of one of the most remarkable and original buildings that the world ever produced, our interest in them becomes redoubled.

The question will naturally occur to many, how is it that two such important pieces of documentary evidence have not yet been published, and taken their place amongst the current architectural literature of the day? To this I have to reply, first, that the language in which they are written is that of the low Greek of the later empire, and that one of them, the professional account, is so full of technical terms as to render it almost untranslatable. The only person, I believe, who ever attempted to translate it into a modern language,—and there was no fitter person,—was Professor Willis, and he, I know, abandoned the attempt. At all events, I do not know of the existence of any translation of these works, except the Latin translation which accompanies the only copy of them that I have ever seen or heard of; and this Latin translation gives all the technical terms, precisely in the words in which it finds them in the original Greek, without attempting to Latinise them.

In the next place I have not been able to find, or to hear of any but one copy of the last-named of these two accounts, although I have inquired and made diligent search for it in most of the public libraries of the Continent and in England. I do not doubt, however, that it must exist in some of the many works printed in the last century, which contain collections of such documents, and could be found, if one knew where to look for it, either in the British Museum or elsewhere. On the only copy to which I have access, I have long been at work, not hitherto with much industry or great success, but I hope, if my life be spared long enough, to complete, with such help as I can get, an English translation of this technical description of the construction of St. Sophia.

I refer to these documents now, however, for the purpose of establishing the fact, or rather a strong presumption of the fact, that St. Sophia's at Constantinople, was the first building, sacred or secular, which exhibited the Mediæval dome, as distinguished from all previously-constructed domes, resting as it does, not upon a circular wall, or hollow cylinder, but on the summit of four arches springing from solid square piers. The internal evidence in support of this conclusion, which is afforded by the account of Procopius, to which I have already referred, is so strong that I will venture to read to you that part of my translation which refers to it. He commences with a general eulogium of the building, and says that had any Christian seen the design of the new building whilst the old one stood, he would have wished the latter destroyed in order to see it reconstructed in its present form. He then goes on to say:—

"The Emperor then, no regard being had to cost,* devoted himself to the building, and collected all kinds of materials and workmen from every part of the world. Anthemius of Tralles, being the most skilful person in the science of mechanics,† not only of those of his own time, but of those who lived in a much earlier age, seconded the Emperor's zeal, designing the works for the artisans, and preparing the models of the future building.‡ With him was associated another mechanician named Isidorus, a Milesian by birth, a man of general intelligence, and one well suited to the purposes of the Emperor Justinian. And herein was the distinctive favour of God towards the Emperor apparent, in having previously provided for him agents who should be most serviceable to him in the execution of the work. Nor is the prudence of the Emperor the less to be admired, namely, in his having selected for matters of the greatest moment the men who, of all others, were the best fitted for their task.

The church accordingly presents (he continues) a spectacle of the greatest beauty; to those who behold it, indeed, wonderful; but to those who hear of it, altogether incredible. For, raising its summit towards heaven, and riding as a ship at anchor above the other buildings, it towers over the whole city; adorning the latter not only as one of her own buildings, but as rising out of her, and presenting an eminence from which the whole city may be seen, as in a mirror, at a single glance. Its breadth and its length are so suitably adjusted that, although very long and exceedingly broad, it will, nevertheless, not be found to be out of proportion. It is, indeed, pre-eminent for its indescribable beauty, for it is alike remarkable in both its majestic size and the harmony of its admeasurement; there is nothing either superfluous or deficient about it. It is wonderfully replete with light and the splendour of the sun; you would say that the place was not lighted from without by the sun, but that the effulgence arose from within, such is the abundance of light that is poured around this temple."

We must remember that the whole of the dome, and, indeed, all the vaults, were covered by Justinian with inlaid gold, and that the light that was admitted through the thirty-six windows that pierced the lower part of the dome, reflected from this golden surface, would no doubt produce that amount of effulgence and the very effect that is here described.

He then goes on to describe more particularly the design, and I must beg you,—bearing in mind that this is the description of an amateur and not of an architect,—to follow this description on the plan which is behind me, and which presents the nearest approach, so far as I am able to form an opinion, of the Church of St. Sophia as it existed when completed by the architects, Anthemius of Tralles, and Isidorus of Miletus; it is taken from one prepared by M. Texier, which is in the library of the Royal Institute of British Architects, and has been compared with those given by Salzenberg and others, all parts having been struck out that appear to belong to a later date; it is drawn, as all the plans that are shown on the walls here to-night are drawn, to the scale of 3 ft. to the inch; the elevations and sections being to the scale of 1 ft. 6 in. to the inch; and it is one of the advantages of a meeting like the present, and of a room such as the one in which we are assembled, that the true relative proportions of different buildings can be exhibited and understood at a glance,—all being drawn to the same scale,—without any fear of exceeding the limits of the space available for the purpose. With such an object and for such an occasion, with an intelligent audience of technical men met together for purposes of mutual study, the necessary inducement is, moreover, offered for the sacrifice of the time and trouble which is necessary in the preparation of diagrams of such large dimensions. This plan of St. Sophia has been kindly prepared for me by Mr. Quilter; and is drawn, like all the others in this room, to the scale of 3 ft. to the inch on twenty-two sheets of imperial cartridge, 2 ft. 6 in. by 1 ft. 10 in.

Procopius, then, thus proceeds to describe this building in language which I have ventured to translate in the following manner. You must imagine yourselves, in following him, to be placed in the inside of the building; he commences with the east end:—

"Now the front of the temple, which faces the east, where the sacred rites to God are performed, is constructed in the following manner: the building rises from the ground, not erected in a straight line, but being by degrees contracted from the sides and receding in the middle* in the form that those skilled in such matters call a semi-cylinder;† this portion of the work rises to an abrupt height and terminates in the fourth part of a sphere." (It is impossible that a more accurate and concise description of the eastern apse, covered with its concha or semi-dome, as it exists in St. Sophia at the present day, and as shown on this plan, could be given by one ignorant of the proper technical terms in which to describe it.) "And, above, on the parts adjoining this portion of the building, is raised a certain structure of a crescental form,‡ which excites astonishment on account of its exceeding beauty, but fear on account of the apparent insecurity of its construction; for it does not appear to rest upon any solid support, but to be suspended aloft to the peril of those who happen to be there. Nevertheless, it is, on the contrary, based upon a safe foundation." (The larger apse, with its semi-dome of crescental form, abutting against the eastern crossing arch.) "On each side of the above buildings, and on the floor, are columns disposed, not in a straight line, but assembled so as to turn towards one another in the form of a semicircle, and above these again is suspended a crescent-shaped structure."

Having thus described the eastern portion of the church, he turns to the west:—"On the side over against the eastern side rises the wall in which are the entrances, and on each stand columns arranged in a semicircle, and supporting a structure altogether similar to that already described."

He next describes the central portion:—"In the middle of the temple are fixed four masses, made by the hand, which are called piers, two on the north side and two on the south side, opposite and equal to one another, having, moreover, between them four columns on each side. These piers are constructed of very large stones, carefully selected and skilfully fitted together by stonemasons. They rise to a great height, and appear to the beholder to be abrupt rocks.

"Upon these piers rest four arches forming four sides, the summits of which, descending together upon the tops of the piers, are fixed there. Each arch thus adjoins its neighbour, the rest of the building rising to an abrupt height.

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* ἀφρόντισας χρημάτων ἁπάντων.

† ἐπὶ σοφίᾳ τῇ καλουμένῃ μηχανικῇ λογιώτατος.

‡ τοῖς τεκτανομένοις τὰ ἔργα ῥυθμίζων, τῶν τε γινησομένων προδιασκευάζων τὰ ἐνδάλματα.

* ἐκ τῶν πλαγίων ὑπεσταλμένη καταβραχὺ, καὶ κατὰ τὰ μέσα ὑποχωροῦσα.

† ἡμικύλινδρον. ‡ μηνοειδές τι.

Of these arches two are erected in open space those, namely, which are on the east and west sides, the rest have a wall below them and small columns. Upon the arches is raised a building of circular form, on which at daybreak the sun first shines. It surpasses, in my belief, everything in the whole world. It is important, however," he says, "that in describing this part of the building I should be neither verbose nor obscure. The four arches being united upon the four sides of a square, the intermediate spaces consist of four triangles, and the boundary-line of each of these triangles is formed by the approach of the arches to one another, coming down to a sharp angle below, but expanding as it rises upwards, until it finishes above in a circular line, which bounds the triangle on this side, and forms the other angles there."

It is impossible to conceive or to write a simpler or a truer description of the Byzantine pendentive than that which is contained in the few lines I have just read; and had I told you that it was written by Mr. Penrose in description of the numerous examples that we saw last year in La Charente, instead of by Procopius, the historian of Justinian, in the middle of the sixth century, it would have caused no surprise to those friends who took part in that excursion, but would have been accepted by them as a very faithful and scholarlike description of a peculiar feature,—the pendentive,—that was constantly before their eyes in the course of that tour.

"And upon this circular wall rises an immense spherical dome,* which presents an admirable appearance, for it does not appear to rest upon a firm structure, in consequence of the lightness of the work, but rather to hang by a golden chain from heaven, and thus to cover the place.

I have only a few words to add to my quotation, descriptive of the perplexed state of mind in which this novel kind of building left this astonished observer when he had completed his examination of it.

"Now, all these things, thus adapted to one another in a marvel'ous manner to this height, some being carried by others, and deriving their support only from those parts which are nearest them, form a harmonious whole† of perfectly unique character (?).‡ Nor do they permit the eye of the beholder to dwell upon any particular object too long; but each in turn attracts and easily fixes attention upon itself; the sight is thus kept in perpetual motion, and the spectator is entirely unable to determine which object of all that he sees pleases him most; but looking about him on all sides, his mind intent, and his eyebrows contracted, he is unable to comprehend the nature of the work, but goes away, wondering at his inability to understand the sight. These things then are so."

He then goes on to describe the other parts of the building. But the extract I have read establishes, I think, two points very clearly; first, that the building Procopius describes is that of which this diagram is the ground-plan; and secondly, that this was the first building of its kind that existed when he wrote. The plan of the Church of St. Sophia, at Constantinople, thus became the typical plan of the Greek Church, and remained so throughout the whole of the Mediæval Periods up to the present day; just as the Basilican plan of old St. Peter's at Rome remained and still remains that of the Latin Church, also up to the present day,—the very last example of that Eastern typical plan, of which it is a very becoming and faithful transcript, being a design which is on the walls of the Academy this year, for a Greek Church to be built at Notting-hill by Mr. John Oldrid Scott.

Modern Byzantine churches of a more extravagant and pretentious character, but based on the same typical design, have been constructed also at Paris and at Geneva.

Now, I do not propose on the present occasion to carry this matter further, or to trace the course of Byzantine architecture from the time of Justinian downwards; although I may attempt to do this at some future time, or, in any case, with the help of the *incertus auctor*, to whom I have referred, to give some account of the actual rebuilding of St. Sophia; of the difficulties that were met with in its construction; of the manner in which they were overcome; and of the successful completion and decoration of the whole work. Any one who wishes, however, to enter into this interesting question, and to work out for himself the history of Byzantine architecture, will find great assistance in his inquiries from the following works that have been published on the subject:—First, the work of Mons. Salzenberg, on "The Early Christian Monuments of Constantinople," which was very ably epitomised and reviewed by Mr. C. C. Nelson, in the Transactions of the Royal Institute of British Architects," in 1855. Next, the admirable work of M. Charles Texier on "Byzantine architecture," edited and given to the world by his friend and collaborateur, Mr. Popplewell Pullan. Thirdly, an interesting volume of M. Couchaud, on "The Churches of Greece." And last, though not least, the marvellously interesting work of Signor Fossati, the architect employed by the late Sultan Medjid in the restoration of St. Sophia, containing perspective views of every part of the building, inside and outside, in coloured lithography.

Before, however, we quit the East in order to observe the first appearance of this Byzantine strain in the churches of the West, let me once more call your attention to the chief characteristic feature in St. Sophia, the one, in fact, which ruled and determined the plan not only of St. Sophia, but of all those Eastern churches of which we have any knowledge,—I mean the large central dome or cupola, balanced on the top of four circular arches, which rested again on four enormous square piers. This vast hemisphere, 107 ft. in diameter, is the predominant idea of the design, to which all the other parts of the plan are subordinate. It rises out of and above them; it is round this great central dome-covered space that the other parts of the building are grouped so as to form in plan pretty nearly the figure of a square; it is in reality a parallelogram of which the length from east to west is somewhat greater than that from north to south. And this is, in fact, the plan of almost all the Eastern churches built after the construction of St. Sophia.

Now, if we contrast this plan with that of the great original Basilican churches of St. Peter, St. John Lateran, St. Mary Maggiore, and St. Paul's without the walls, with their elongated naves, and long range of columns and arches in double rows on each side, and their flat wooden roofs, we shall be struck with the great difference that existed in Christendom between the type of the early architecture of the church of the East and that of the West.

During the next 500 years of the Christian Era we find few traces of the influence of Byzantine art in the churches of the West. At Ravenna we have, it is true, several churches, the ornamentation of which is of Byzantine character, but with one exception their plans are those of the Latin church: and that exception, San Vitale, although covered with a dome of very singular construction, is of octagonal form, and not therefore in accordance with that of the Greek Church. It is not, indeed, until the close of the first thousand years of the Christian Era that we meet with a church in Western Christendom the design of which reminds us of the plan of St. Sophia and of these early buildings of the Eastern Church.

In the Church of St. Mark, at Venice, we recognise at a glance the same great typical feature which distinguishes St. Sophia's, namely, the large central dome carried by four circular arches resting on four square piers. We see not only that, but four additional domes of nearly equal size and weight grouped round the central dome; and we thus see realised in the plan of a Western church, for the first time, so far as I know, the true form of the Greek cross, consisting of four limbs or arms of equal length, height, dimensions, and importance, differing in this respect from all Eastern churches with which I am acquainted.

St. Mark's has been so materially changed by work of later date, inside and outside, that we cannot form a correct idea of its primitive appearance or of the ornamentation with which it was clothed; but we have no difficulty in determining the primitive ground-plan, and of stripping it of all additional work of later date. The diagram behind me presents that ground plan in what I believe to be its original condition.

It is obvious that we have here the same great principle of construction that characterises St. Sophia. It is true that whereas the central dome of St. Sophia is 107 ft. in diameter, that of St. Mark is only 41 ft., but to make up in some sort for this, we have the four other great domes of the nave, transepts, and choir, altogether giving a total domical surface nearly twice as great as that of St. Sophia

The 160 drawings on the walls are the enlarged diagrams of the same number of sketches, selected by me from the total number of 662 drawings that were made by the twenty working men of the party who accompanied me to La Charente. They are typical examples of the architecture of the department, which, I may explain, very nearly corresponds in its limits with the ancient province of "Angoumois." The department contains upwards of 500 churches, of which no less than 432 owe their chief character, if not their origin, to the church builders of the twelfth century; there are some few of probably earlier date, but very few that show any later date. Church building, in fact, seems to have been begun and to have been carried on in Angoumois during that century with a fervour and in a manner to which there are few parallels in Christendom, but which completely died out there at the close of that century.

We find, as we might expect, the repetition of the same main features throughout the whole of these churches, marked, however, by a distinctive orginality of treatment, according as the church was a large or a small one,—a cathedral, a conventual, or a parish church,—which renders their study one of peculiar interest.

To attempt to give a detailed account of each of the churches that we visited during this excursion of fourteen days, within the limit of time that is at our disposal this evening, is quite out of the question. What I therefore propose to do is, first, to point out the chief characteristics of this remarkable phase of the architecture of Europe of the Transitional period, and afterwards to pass rapidly in review the drawings on the walls that best illustrate these chief points of interest, indicating, at the same time, the most remarkable of the buildings that we visited.

The first feature to be noticed is the dome; its existence over the central portion of the church or crossing, where the church was a cross church, is almost invariable; but its extensive use as a covering for the several compartments of the nave, where it occurs as a substitute for the Romanesque barrel vault of the middle and South of France, and for the quadripartite vault of the north, is much more remarkable. That it was an importation from the neighbouring province of Perigord there is little doubt. It does not appear, however, to have been thus used before the commencement of the twelfth century. In some few of the earlier examples its section is semicircular, and its form that of a hemisphere; but in by far the greater number its section shows the pointed form. With the exception of this modification it remained unaltered from its first introduction to its final disappearance at the close of the century; nor was its use extended beyond the limits of these western provinces, or turned there to any other account than has already been noticed; it was found, in fact, entirely unsuited to the new ideas in art that then began to prevail; its finite form had nothing in common with the aspiring features and vertical tendencies of Gothic work.

The experiment had been tried and had failed. The appearance, however, of this Eastern feature in buildings which, in all other respects, are thoroughly Western in character, has a singular and striking effect to those who see the interior of an Angoumois church for the first time. As regards the exterior, it does not appear that these domes were ever visible outside. They were covered with a timber roof, which stopped against the west gable, on which its traces, wherever the gable has not been destroyed, are always visible. There are numerous illustrations on the walls of these series of conical vaults over the nave which I shall point out by and by. Before, however, I leave this feature, I must explain that its employment as a covering of the crossing in this Department appears to be earlier than its use as a vault to the nave. Moreover, in the nave the spandrel between the arches and the dome is filled with a pendentive, whilst over the crossing we often find this space filled with a squinch, which appears in this country to be the earlier form of the two.

The next feature to be considered, one that is in immediate connexion with the last, and one that constitutes one of the leading characteristics of the architecture of the district, is the manner in which these central domes were covered, for of course it would never have entered into the heads of these Mediæval artists to leave this plain hemisphere to remain exposed in its crude nakedness, looking like a baker's oven in the North of England, or like a close kiln in the South of France. They covered

* Θολός is the word used here τρουλὸς by the Auctor Incertus.

† Μίαν ἁρμονίαν. ‡ Ἐκπεπρισάτην.

it in a seemly manner with a central tower, crowned, usually, with a conical spire of remarkable character; and, although by far the greater number of these towers are destroyed, a sufficient number of them remain to enable us to judge of their general character and effect. One of the best examples of which drawings are exhibited is that of the tower and spire of Trois Palis, the low conical spire of which consists of a series of stones resembling scales, somewhat difficult to describe. Another characteristic of this country is the manner in which the west fronts were designed. The chief ornamentation of the exterior was lavished upon them; they were usually divided into three compartments vertically, and into four or more horizontally, including the gable. The ground story generally shows three large arches, the central one containing the principal doorway. The second story usually carries an arcade of many small arches, the whole of the capitals of the small shafts being richly ornamented with figures and foliage. But there is one feature that is often met with in these west fronts that gives them a meaning, a significance, and an importance that add immensely to the interest with which we regard them as works of art. It has often been remarked that in several of the west fronts of this district is to be seen the figure of a knight on horseback, with accessories about it of a peculiar kind. The existence of this feature in the churches of Chateauneuf, Ruffec, Aubeterre, and Civray has often been noticed, and variously explained; it remained for the Abbé Michon, who has published a very interesting account of the churches of this country, to assign to this feature its full significance. He asserts that this effigy represents the knight or baron who founded or constructed the church, and he finds in the prostrate figure before his horse's feet at Chateauneuf the symbols of his feudality, and in the standing female before his horse's head the representation of his wife. I have no doubt whatever that this interpretation is the right one; but I am prepared to carry the proof that these west fronts,—the last works of the completed church,—had this monumental character; for where this effigy is wanting we have other proof that this was their true designation. We have, for example, at Chalais, the representation of a half-opened tomb, with female mourners in front of it,—a probable indication that the burial of the founder, who may have died before the church was finished, is thereby indicated; and at St. Arnaud we have, as I believe, the actual sepulchre of the founder himself, inserted, after its completion, in the west wall of the church, under the left-hand arch of the ground story, with an ornamental arcade on its front; we have also at Villognon and at Montbronn monumental slabs, in the former case existing in the west, and in the latter case removed to the wall of the south transept, when the west front was restored in later times; and at Chillac a monumental coped slab, resting on the seat of the left-hand arch of the ground story. Regarding, then, these west fronts as the last work and the memorial of the founder of the church, we have no difficulty in accounting for their ornamental treatment and their pretentious character, and can readily understand the clerical wisdom which induced those who controlled the execution of these works to prescribe that the memorial of the benefactor who constructed the church should find its place in the part of the building which was the last to be constructed.

But perhaps the most remarkable characteristic of the architecture of this province is the extraordinary richness of its ornamentation. This ornamentation is of two kinds, that which represents figures of men, animals, and birds, and figures of a mixture of all three; and that which represents foliage. The former is altogether more or less of a barbaresque, the latter of an extremely rich and pure character. It is, of course, not difficult to imagine and to attribute meaning of a deeper interest than meets the eye at a first glance at these "*chapiteaux histories*," as the French call them; but I confess that I do not think it is at all necessary to search the Scriptures for the interpretaion of the scenes we find sculptured in these works. They seem to me to be the natural representations of the scenes of ordinary life with which the inhabitants of those countries were at that time generally occupied: scenes of battle and strife, scenes of the chase, and struggles with the beasts and animals with which the country abounded. Here and there an allusion to some Biblical text may be detected, but they are rare cases. Mr. Sharpe concluded by rapidly passing in review a few of the chief buildings represented in the magnificent series of drawings on the walls, and expressed his great obligations to many gentlemen who had given up much time and labour to produce them.

Mr. Sharpe interpolated with his paper some supplementary comments, in the course of which he combated the notion that the pendentive was an abstruse or mysterious piece of construction. He coincided with the view of the late Mr. J. W. Papworth when he said that there was very little thrust on a dome unless it was loaded; indeed, a dome was very nearly self-supporting. But there was very considerable lateral thrust on the arches which supported the dome, and this had to be provided for. Even so great an authority as Sir Gilbert Scott had theorised about the dome, and had stated that the four pendentives were merely four segments of a larger dome; but this was the result of accident, and not of design. In reference to St. Front at Perigueux, which was almost a copy of St. Mark's at Venice, and was one of the earliest Byzantine domical buildings in France, Mr. Sharpe referred with regret to the fact that it had been "restored," the full significance of which term was not realised by Englishmen, loudly as English restorations were sometimes condemned. A French restoration frequently meant what had been done at St. Front, which had been absolutely pulled down and rebuilt, professedly in the same style, and no doubt with a greater or less degree of approximation to the original composition. The droll irony of the situation was that although in France no buildings were eligible for "restoration" until they were old and interesting enough to be classed as "*monuments historiques*," the very process of "restoration" destroyed their history, and robbed them of all their interest. In reference to the two hundred drawings on the walls, Mr. Sharpe said that they had been enlarged from the same number of sketches selected by him from the 662 drawings, large and small, made by the excursionists. The whole of these drawings were the result of only fourteen days' work of from fourteen to sixteen gentlemen, although the preparation of the enlarged diagrams for the lecture had occupied a period of nine months. The ground-plans of the buildings visited had been made by Messrs. Quilter, Paice, and Hayes; Mr. Kersey had groped amongst the roofs and taken the measurements, which had been chronicled and delineated by Mr. Garrett. The west fronts were the work of Mr. Arthur Hill. Mr. Waddington's pen-and-ink sketches were as remarkable for their excellence as for the rapidity of their execution. Mr. Penrose had made some graphic pencil sketches, while Mr. Spiers had made a beautiful series of water-colour drawings of the buildings visited. Mr. Burges some time ago described the Association's excursion as a "scramble"; Mr. Sharpe only wished that such "scrambles" could become more general amongst young architects.

Professor Donaldson, in moving a vote of thanks to Mr. Sharpe, said that in his interesting account of the Church of St. Sophia, at Constantinople, he had given the poetry of Procopius, but not the prose, inasmuch as he had omitted to state that the dome fell three times. In fact, the present dome really consisted of two domes struck from different centres. The love with which Mr. Sharpe pursued his studies in architecture was only equalled by his public-spirited desire to further the welfare of young architects.

Mr. F. C. Penrose, in seconding the motion, bore testimony to the fact that the success of the Association's annual excursions was mainly due to the untiring energy, admirable foresight, and good management of Mr. Sharpe. He (Mr. Penrose) coincided in the expression of regret that by the so-called method of "restoration" in vogue in France pages of history were continually being lost which could never be replaced.

Mr. Phené Spiers, in supporting the motion, expressed the opinion that the dome of St. Sophia's was a purely Classic dome, and was not the same as the Mediæval dome.

Mr. Roger Smith also supported the vote of thanks, remarking that Mr. Sharpe had in some sense, but in a different sphere, filled the void occasioned by the death of the late Professor Willis. The systematic manner in which he grouped his illustrations for purposes of comparison was a point well worth noting and remembering by others.

The motion having been put to the meeting and enthusiastically carried,

Mr. Sharpe, in reply, expressed his acknowledgment of the kind manner in which his efforts had been referred to by Professor Donaldson, Mr. Penrose, and Mr. Roger Smith,—all of them gentlemen whose commendation was exceedingly valuable. He thought that Mr. Spiers had slightly misunderstood him, for a dome was a dome, and was neither distinctively Classical nor distinctively Mediæval.

The meeting then broke up.

## GENERAL BUILDING REGULATIONS FOR THE UNITED KINGDOM.

BY MR. J. HONEYMAN.*

THAT I may fully utilise the time at my disposal, I shall, without preliminary remarks, plunge at once into my subject. My object is to show, first, that it is expedient that the regulations affecting buildings in all parts of the kingdom should be assimilated and made the subject of one Act of general application; and, secondly, to indicate the proper scope of such a measure. It will be convenient still further to subdivide my subject thus:—Under the first division I shall show (1) that the existing state of matters is unsatisfactory; and (2) that the defective and unsatisfactory character of the present system can only be remedied by the operation of a general Act; and under the second main division I shall direct your attention (1) to the class of subjects which alone should be dealt with in a Building Act; and (2) to the machinery by which its provisions should be enforced.

First, then, as to the existing state of matters: I shall only devote a few sentences to this part of my subject, and, indeed, I refer to it chiefly for the benefit of our metropolitan brethren who are in a great measure exempt from evils which afflict us less fortunate provincials. The special feature of legislation affecting buildings as it stands is this: that every borough throughout the country is allowed to devise its own bye-laws. Most of the large cities have done so, as well as innumerable insignificant boroughs, and their various local codes have received the sanction of the State, either in accordance with the provisions of the Public Health Acts or by special Acts of Parliament. Now this diversity of laws regarding matters which must ever be essentially the same in all parts of the country is obviously a mistake, and cannot fail to be a source of inconvenience. Moreover, where special Acts are obtained, an additional element of mischief is introduced; because in such cases corporations invariably reserve power to make bye-laws for themselves, and the community may be subjected not merely to bad laws, but to still worse and more harassing, because variable, bye-laws.

Addressing such an audience, I need not pause to illustrate this, but hasten on to show—secondly—what perhaps may not be quite so obvious, that relief from these and other evils of the present system must be sought in the operation of a well-devised general Building Act.

A variety of considerations have of late forced this conviction upon me, especially this, that there seems to be in the minds of civic rulers a sort of unaccountable, but distinctly pronounced, jealousy of the outside public, and a disinclination to be guided by, or even to listen to, any professional men, except their own officials, which makes it hopeless to expect that any local Act shall embody the collective wisdom even of the locality for which it is intended, much less that of the country. Now, in most cases, the collective wisdom of the Town Council and their architect is wholly inadequate, and the only way to concentrate the intelligence of those best qualified to deal with the subject, whether lay or professional, is to give the measure a central character. In this endeavour past experience would hardly warrant us to expect much encouragement or assistance from provincial authorities. The initiative must certainly be taken by others, and by none can this be done with more hope of ultimate success than by the architectural profession throughout the country, through the instrumentality of the Institute.

The failure of corporations in dealing with the subject in times past is manifest; and it is worthy of remark that whereas the London Building Act, which is the oldest, is still the best, the most recent attempts at legislation seem to be the worst. Nor is the reason of this

* Read at the General Conference of Architects, as already mentioned. See p. 607, *ante* for discussion which followed.

far to seek: in framing the Metropolitan Building Act the highest professional talent was called into requisition, and the experiences gathered from many previous attempts at legislation were utilised; but in framing local bye-laws the highest talent is apparently not desired, and is, in point of fact, unattainable. As a rule the only advice a corporation will consent to take is that of their own paid official, whose interests must be more or less affected by any legislation, and who, therefore, cannot be an entirely suitable adviser, even if he approach the subject free from those prejudices which in course of time naturally spring up in the comparatively isolated sphere of official duty. Let it not be imagined that I wish to throw discredit on borough surveyors, or in any way to imply that those in the large cities of the kingdom at least are not men of ability and integrity. I have the highest respect for those I know, have experienced much courtesy and consideration from those with whom I come most in contact, and bear ill-will to none. My object is simply to bring out clearly their comparative insufficiency as advisers in a case of this kind. However disinterested, however able, they comprise after all but a fraction of the profession, and "in the multitude of counsellors there is wisdom." Let us then endeavour to bring the wisdom of the many to bear on the subject, and unite in obtaining for the general good a wise and moderate measure.

I can hardly pass on to the second division of my subject without, in justification of my strictures on local legislation, making at least a very hurried reference to some of its recent results. Let us, for example, glance at some of the bye-laws newly promulgated by the Corporation of Birmingham. By these it is enacted that the builder must furnish not merely "detail plans and sections" showing the position and form of everything, and therefore, I presume, elevations, but also a copy of the specification, which with the plans "shall be retained by and belong to the Council." Again, "the borough surveyor shall determine the position, thickness, and situation" (*sic*) of division walls to prevent the spread of fire, and whether a new building requires such division or not. He shall also determine when a building must have a layer of concrete or other hard material, "of such thickness as he shall prescribe, spread underneath the floor-line." He shall determine the height of chimneys, their dimensions, and the materials to be used in their construction; also how drains are to be ventilated and how trapped. He must also design the means of egress and ventilation for every building "intended or adapted" for the reception of more than 200 persons. He is also, among other things too numerous to recapitulate, to approve of the plans and specifications of the urinals which every public-house keeper is required to erect, and he is to use his discretion in regard to a great many other things. Now, in view of such provisions as these, it must naturally occur to a stranger to ask if there are any architects in Birmingham at all? We know that there are able men in Birmingham; but apparently the Corporation and their advisers have thoroughly satisfied themselves that their architects are such a set of imbeciles as to be utterly unfit to be trusted with the most ordinary details of their professional work.

Of course it must not be forgotten that in all large towns the greater portion of the dwelling-houses are erected by speculative builders, without the aid or supervision of architects, and it is probably the necessity of dealing with such cases effectively which leads the authorities to seek somewhat arbitrary powers; but it is, I conceive, quite possible to define clearly what is required, and highly inexpedient to leave much to the discretion of officials, or practically to supply speculative or disreputable builders with architects at the public expense.

But both the laws and the administration of them are at present utterly inefficient; and even when corporations have it all their own way, they seem, with their present staff of officials, to be incompetent to exercise the power they possess. I shall just offer one illustration of this. In the important town of Greenock, which is blessed with a dean of guild court, a master of works, and bye-laws of its own devising, prescribing, among other things, the lodging of very complete working plans, and their appropriation by the authorities, a building has just been completed in which every sound principle of arrangement and construction, so far as these bear on the safety of the lieges, seems by a most perverse ingenuity to have been set at defiance. The building is about 145 ft. long. The street-floor is occupied by shops, of which there are eleven, and three floors above these are occupied as dwelling-houses, the access to which is by galleries extending along the back wall. There are in all about thirty separate houses, and the only communication between the three upper floors and the street is by one confined stair ascending from a passage fully 100 ft. from one end of the building. The galleries are formed by simply allowing the joisting of each floor to pass through the back wall, and project to the required width; and to complete the picture, the whole area of ground behind is covered with buildings one story high, part being occupied as a hall, and the rest as saloons in connexion with the shops. The steps of the stair are stone; but they are actually supported and enclosed by lath-and-standard partitions. There may be some brick partitions in the building above the first floor,—I believe there is one; but I must say that, on the occasion of my visit, none of those I sounded were brick. Now let it be supposed that a fire occurs in the cabinet-maker's shop, which is about the centre of the building; if the stair stood long enough the families nearest it might possibly escape, but the case of half the families would be utterly hopeless. The first burst of flame would destroy the wooden galleries, all connexion with the only staircase would be cut off, and they could neither get down nor up. The latter consideration certainly is not of much consequence, as the front wall has no parapet, and the building is much higher than those adjoining at either end. On the other hand, if the fire happened to occur in the shop immediately below the wood-supported stairs, the cremation of those thirty families would be a matter of absolute certainty. The arrangement is monstrous, even if the staircase and galleries were fireproof; what shall we say of it as it is, or of those who, with the full details before them, can sanction such an erection?

Perhaps in this connexion I should allude to a bye-law to which municipal bodies seem to attach much importance,—I refer to the law by which they secure copies of all plans which they approve. I do so for the purpose of stating a few facts regarding its working, showing what a great and useless burden it is upon the community, and not because it is a special grievance to our profession. I am satisfied that if it could be shown to be of any practical utility we,—I shall certainly say for myself, *I*,—would not object to it. We have ourselves to blame if we are not properly remunerated for any extra work it causes us; and it is not as a professional man, but as a member of the community, that I protest against it. The law is simply indefensible, and besides necessitating a vast amount of useless labour and expense, it undoubtedly subjects many architects to gross injustice. In illustration of the first of these results the following facts may be interesting:—

In the city of Glasgow alone, excluding the suburbs entirely, in the course of the year ending September 1, 1875, 657 sets of drawings (besides plans of new streets), were made for and retained by the Corporation. Each set comprises block plan and working plans, elevations, and sections, with all dimensions figured complete; and assuming that on an average five sheets are sufficient for these, we have this pleasing result, that the community are annually saddled with the expense of preparing 3,285 sheets of carefully prepared architectural drawings for no earthly purpose of utility,—"rubbish heaps," in short,—where embryo city architects perchance may grope, and the mere custody of which entails an annually increasing expenditure.

But while, in large cities, there is not much likelihood of any unfair use being made of these drawings, the case, under the present system, is widely different in small boroughs. There the architect, who supplies a complete set of his working drawings, in terms of this bye-law, is entirely at the mercy of the borough surveyor; or the man who is variously styled surveyor, town architect, inspector, or master of works, who gets possession of the plans, and practically does what he likes with them,—a most disagreeable state of matters, and likely to give the surveyor a most unfair advantage over, it may be, a rival practitioner.

I must now refer to an objection to a general Act which will naturally occur. It may be thought that building regulations suitable for one part of the country could not very well be enforced in another without numerous modifications to suit peculiarities of local practice; but the force of this objection depends entirely upon the scope of the Act. The object of the legislation we desire, and the only excuse for it, is to secure in the interest of the community certain *desiderata* not necessarily affected by locality, but the attainment of which must be made paramount alike to local prejudice, ignorance, or indifference; and this leads me to the second division of my subject,—the consideration of what can and ought to be embraced in a general Building Act.

I. The distinctive character of every regulation which is admissible must be that it has reference to something which is absolutely necessary for the public safety in whatever way that may be affected by the concentration of men in large communities. Such regulations, it is obvious, should be as applicable, and as obligatory, in one part of the country as in another. Admittedly, it is no easy matter to determine what these are. It would be a hopeless task for any single individual to attempt to do so, and hence the peculiar fitness of such a meeting as this taking up the subject, and such definite proposals as I venture to make will, I trust, not merely incite others to criticise, but also to contribute towards the elucidation of what is best.

It may help to clear our way if I commence here by pointing out some things which ought not to be included in a general Act. In this category I place all regulations relating to the laying out of land for building purposes, the width of streets, the formation and maintenance of streets and sewers, the prevention or removal of nuisances, the prevention of overcrowding, and other analogous details of local management. These and all purely sanitary regulations not affected by construction must necessarily be excluded from a general Building Act, and be left in the hands of the different corporations or local authorities, rural or urban as the case may be, and their respective superintendents or masters of works, or sanitary inspectors, to be dealt with by special bye-laws as at present, under the provisions of the Public Health Act. In such matters uniformity of practice is neither possible nor desirable. For example, the corporation of Birmingham has decided that no street is to be less than 50 ft. wide, and no one outside of Birmingham has any cause to complain of this; but such a restriction in a general Building Act would be simply preposterous, because other boroughs may with equal authority fix upon 60 ft., or 40 ft., or 30 ft., as their minimum; and, in point of fact, the width of every street should be determined by accidental local circumstances; for instance, it should have a distinct relation to its aspect, as well as to its length, and a narrower street would be admissible in London than in Aberdeen.

I cannot, in the time allotted to me, illustrate this further, but trust it is unnecessary to do so. It must be evident to every one that in framing a general measure we cannot be too careful to steer clear of the quicksands which have proved so troublesome in the course of provincial municipal legislation—the accumulations of unnecessary details; the references to matters purely local, it may be temporary, expediency; restrictions of doubtful utility; and the ambiguity or latitude of interpretation which justifies officials in at one time approving and at another refusing to sanction the very same thing. Besides, it must never be forgotten that the less the building trade or any other trade is interfered with by a paternal Government the better. Undue interference discourages invention, diminishes proper responsibility and self-reliance, and is in every way inimical to those principles of sound political economy to the recognition and application of which our country owes its pre-eminence among the nations. We must therefore see to it that any new legislation on this subject is not of a reactionary or restrictive character, but rather that it is adapted to foster ingenuity and every beneficial innovation which our advancing science may suggest.

Keeping such limitations in view, I shall now attempt to sketch the outlines of a suitable measure; and here it will save time and make my treatment of this part of the subject intelligible if I say at the outset that I take the Metropolitan Building Act as the frame—the backbone of the new Act; and as you are all familiar with it, or at least may easily refer to it, I shall not recite the various sections which I approve of—that is, the great majority of them—nor such as I accept with very slight modifications. These must be held as read, and I shall thus be free to deal with additions and alterations only; and in the meantime I shall lay my proposals before you without note or comment.

1. A suitable title might be the Boroughs Building Act, or Boroughs General Building Act.

2. In any borough with a population of less than 6,000, the adoption of this Act should be optional, but the council would not be authorised to enforce any different regulations.

3. The limits of boroughs for the purposes of this Act should be extended; thus, in boroughs with less than 100,000 inhabitants, the limit would be extended to half a mile at all points beyond the borough boundary; and in boroughs with upwards of 100,000 inhabitants the limit would extend one mile beyond the borough boundary; while in certain exceptional cases, such as London, Manchester, Glasgow, and other cities of first importance, the area would extend still further, and be specially defined by the Act.

4. In all cases a block plan and block section, showing the relation of the proposed building to the street and to adjoining properties, and the relative positions and levels of the drains and sewer, should be lodged with and retained by the corporation. All other plans lodged and approved should be signed by the surveyor and returned.

5. No buildings should be exempt from the operation of the Act.

6. Sections C. to CIV. of the Local Management Act, relating to paving and draining of private courts, formation of vaults under streets, occupation of underground rooms, &c., should be incorporated in the new Act.

7. Sections CXXI. to CXXIII. of the same Act, regarding hoardings, should, with some alterations, be adopted.

8. Section CCIV. of the same Act, prohibiting the erection of buildings over sewers, &c., would also be useful.

9. It should be enacted that in certain circumstances when a building is to be erected on formed ground the entire area should be covered with asphalte, concrete, or some other impervious material.

10. Regulations for the construction of scaffolds, stands, and other temporary erections should be added.

11. The regulations affecting stone buildings must be amplified, to meet the requirements of localities where building with stone is the rule, and with brick the exception.

12. Before commencing any new work, building owners should, whether they intend to interfere with party structures or not, intimate to adjoining owners, by registered letter, their intention of building; and adjoining owners should have an opportunity of examining the plans of the proposed buildings in the office of the District Surveyor at any time during, say, four clear days after such intimation has been issued.

13. The twenty-seventh section of the present Act, limiting the size of buildings without a fireproof division to 216,000 cubic feet, should be modified, and the limit extended.

14. While regulations affecting iron structures must remain somewhat indefinite, it is highly desirable that a minimum of strength should be prescribed for iron pillars and girders carrying stone or brick walls.

The other modifications of the existing Act which I think desirable refer chiefly to the duties and emoluments of surveyors, and will be most conveniently stated in connexion with the second head of this division of my subject, namely,

II. The machinery by which the provisions of the Act should be enforced.

It is important that the committee or court charged with the administration of this Act should be purely an administrative, and in no respect a judicial, body. Their business would simply be to see, with the aid of competent surveyors, that the various requirements of the Act were honestly enforced. It would require no special qualification,—except the possession of an average amount of common sense,—for the exercise of such a function; and, believing the creation of an *imperium in imperio* to be inadvisable where it can possibly be avoided, I propose that no new authority should be created, but that the work should be left to vestries and district Boards in London, and to a special committee of the town council in each borough. These committees or Boards would receive periodical reports from their surveyors, as prescribed in Sections LII. and LIII. of the present Act, and present a full report of their proceedings to the town council or central authority annually. The staff of surveyors would really constitute the most important part of the machinery for giving effect to the Act, and care must be taken to prevent any but experienced, efficient men being eligible for these posts. With this view I suggest the following regulations:—The thirty-first and subsequent sections of the London Act, with reference to the qualifications and appointment of surveyors, would remain, with these two slight modifications—(1) no one should be eligible who had not served as an apprentice and draughtsman a certain number of years in an architect's office; and (2) for the convenience of candidates in different parts of the country there should be one or perhaps two centres for examination in Scotland, and probably four in different parts of England, besides London, where the examinations would remain in the hands of the Institute, with which the different local boards of examiners should co-operate. A further and radical change in the office of surveyor which I propose is this—that in all cases he should be bound to devote his whole time to the duties of his office, and should be strictly debarred from engaging in any other professional work. He should also receive a liberal salary from the Corporation, to whom all fees should be paid. It may not be easy for those who have been accustomed to the present arrangement in London and elsewhere to reconcile themselves to the idea of such a change, but it seems to me to be recommended by weighty reasons. Its most obvious immediate effect would be the resignation of a large number of the present surveyors. This, though in itself not desirable, is inevitable; and from this would follow the worst, probably the only bad effect of the change,—namely, that the community would thus lose the services of many gentlemen of ability and great experience who at present hold appointments as surveyors. This, however, would only be a temporary inconvenience, and would probably be more than counterbalanced ultimately by the uniformity of practice which would result from the special experience of the new class of surveyors, whose further qualifications and duties I shall now attempt to sketch.

The sixty-second section of the present Act prescribes that, "it shall not be lawful for the superintending architect to practise as an architect, or to follow any other occupation;" and this rule should apply to every officer appointed under the new Act. In point of fact, most of the new staff would be in the position of the "superintending architect" of the old Act, as there are only about a dozen cities where more than one surveyor would be required, and where the rule would extend to subordinates. The name, "surveyor" or "chief surveyor" as the case may be, should be retained in preference to "architect," to prevent confusion with another official who would still continue in the employment of many corporations, I mean the "city architect." There ought to be no such official, I may be allowed to observe in passing. The chief surveyor should be able to give the corporation any professional advice they require, and if they wish professional work they can, and ought, to get it done by regular practitioners.

But, to return. It must be borne in mind, while considering this point, that we are dealing with the provisions of an Act which shall be enforced in towns great and small in every part of the country. Now it will, I think, be at once conceded that certain safeguards against unfairness provided by the London Act, and in force here, would be, to all intents and purposes, impracticable in smaller communities.

It is essential that the impartiality of the surveyor should be as far as possible insured, and the best security for this is, that he should simply act as the guide and officer of the corporation within clearly-defined limits, receiving from it adequate remuneration for so doing. Another incidental advantage of this arrangement would be that, the surveyor not being in a position to make use of the plans submitted to him for his own purposes, architects would more readily give him every facility for studying their plans, and all necessary information regarding them; they would, in short, co-operate with the surveyor, greatly to the advantage of the public.

There is still another reason for the change which seems forcible to me—perhaps because I have not a special gift for organising—namely, this, that by the present system the most experienced surveyors are just the men who have least time to attend to the duties of their office, and the greatest temptation to neglect them; and surely that is a bad state of matters. Observe, I do not say that any of the district surveyors do neglect their official duties; I have no information on that point before me, but the fact remains as I have stated it. The better qualified a man is to act as surveyor by the acquisition of mature experience in general practice the less time he must certainly have for his duties, and the more must he depute these duties to subordinates. The value of large experience is unquestioned, but you will observe that the regulations I have already proposed insure the appointment of experienced men,—men at least who, even when they commenced their duties as surveyors, would probably possess the necessary qualifications for membership of the Institute. Now the great bulk of the surveyor's work prescribed by the Act could be performed by such men perfectly as well as by the most eminent member of the profession; they would receive suitable remuneration for the kind of work they were called upon to perform, and the eminent architect,—whose advice, of course, would always be available if required,—would be free to turn his wider experience to more profitable account.

But how would such a change affect the status of surveyors? Clearly thus: In a few exceptional cases, chiefly in the metropolis, the new surveyors would be inferior to those who at present hold the office; but in the great majority of cases throughout the country the status of surveyors would be vastly improved. To secure this, however, it is essential not merely that their qualifications and duties should be clearly defined, but also that their salaries should not be left entirely to the caprice of corporations. In no case should the salary be less than 500*l.* per annum, and chief surveyors should receive considerably more. To the ordinary municipal mind the idea of paying more than 500*l.* per annum to an inspector of buildings will seem ridiculous; but this is only another proof, if proof were needed, that the ordinary municipal mind is not competent to deal with the subject, and that the sooner the Imperial mind is brought to bear upon it the better. It seems, indeed, sufficiently difficult sometimes for corporations to comprehend any good reason for paying architects much more than labourers' wages, and we need not be surprised if they fail to discriminate between a district surveyor and a clerk of works or inspector of nuisances, who is probably overpaid at two guineas a week. Yet, in point of fact, there should be as wide a difference between these two classes of officials as there is between one of her Majesty's Inspectors of Schools and a School Board officer who looks after defaulting parents.

Obviously, 500*l.* would be too much for every petty borough to pay; but it is no more necessary that the work of a surveyor should be confined to one borough than that the work of an inspector of schools should be confined to the jurisdiction of one School Board. To each surveyor would be assigned a district, the fees from which should nearly, if not wholly, cover his salary and other incidental expenses. In some cases the district would be large, and embrace several boroughs; in others, it would be confined to one borough; and in others to a part of a borough. Let me offer one illustration taken from a district with which I am familiar. Glasgow, and the suburbs which would be connected with it for the purposes of this Act, would probably require four surveyors, and, without any additional burden on the community, we could afford to give each about 900*l.* per annum; but one surveyor would easily overtake all the work in Paisley, Johnstone, Renfrew, and Greenock,—perhaps I may say in every borough in Renfrewshire,—and the work would be better done and more cheaply than if each of these boroughs employed an inferior class of surveyor at a much lower salary. The distribution of surveyors, in short, would be determined by the requirements of the different districts, and precise information on that point could be easily obtained. By some such arrangement as this, the administration of the Act in every part of the country would be in the hands of thoroughly qualified independent men, who would command the respect and confidence both of the public and of their professional brethren.

Much more might be said on this important part of my subject, but time forbids. Doubtless much diversity of opinion must be expected in such a meeting as I now have the honour to address, but I trust this will not interfere with that patient and cordial co-operation so essential to the attainment of any valuable practical result.

Although I fear that I have already overtasked your patience, before resuming my seat I must allude, for a moment, to the gratifying circumstance that the subject which we have now been

considering has already engaged the attention of the Government. The Local Government Board appears to have arrived at the conclusion that it is not only possible to frame building regulations of general application, but that it is a thing which ought to be done. Through the very great courtesy of the president, Mr. Sclater-Booth, I have had an opportunity of perusing the draft of model building regulations at present under the consideration of the Board. These are incomplete, and fail to embrace many of the requirements to which I have referred, but so far as they go, with some trifling exceptions, they are admirable, and, let me say, especially admirable in this, that they are well defined and free from ambiguity; that most objectionable expression, "to the satisfaction of the borough surveyor," or "in such a manner as the borough surveyor may direct," does not once occur in them. I sincerely hope that the Local Government Board will persevere and carry on to completion the good work which it has so fairly commenced; and I may be allowed to say in conclusion that the evident desire of the heads of this important department to benefit by the collective wisdom of our profession is not the least hopeful augury for the ultimate result of their deliberations.

## OPENING OF A NEW BOARD SCHOOL AT DEPTFORD.

ON Tuesday evening last the 120th new school built by the London School Board was opened in Regent-street, Deptford. This school is planted in a district teeming with the class variously designated "street arabs," "gutter children," and by Lord Sandon recently as "wastrels." The chair was taken by Sir Edmund Hay Currie, vice-president of the London School Board, whose opening address vindicated the policy and work of the Board.

The building is in the Queen Anne style, and was designed by Mr. Robson, architect to the Board, with Mr. J. Jackson as clerk of the works. The contract has been executed by Mr. B. E. Nightingale. The building has a frontage of 180 ft., the premises extending in width between Regent-street and Stanhope-street, in each of which streets there are separate entrances to the schools for boys, girls, and infants. Each of the principal schools is 60 ft. by 21 ft., the rooms for the infants and babies being on the ground-floor. In connexion with each of the three schools there are three rooms, 20 ft. by 19 ft. each, those on the ground-floor being appropriated, one as a babies' room, and two as infants' class-rooms. The boys' and girls' schools on the first-floor have each three class-rooms attached. There are also rooms provided for the head master and mistress.

The whole area, including the playgrounds, is 13,000 square feet, which is much less than the Board desired to provide. The schools are fitted with Elsley's patent window gearings, and with Boyd's ventilating stoves. The whole of the rooms are lofty, light, and airy. The cost has been 7,526*l.* 9*s.* 4*d.*, or 9*l.* 0*s.* 11*d.* per head. Provision is made for 300 infants and babies, and 266 each of boys and girls. On the first day of opening there were 234 infants present, 130 girls, and 180 boys. Sir Edmund stated that while this was the one hundred and twentieth school opened, they had fifty more schools building, and twelve others under consideration. They had already made provision for 106,000 scholars, and were providing accommodation for 37,000 more, or 143,000 in all. When they commenced their operations there were 174,000 children attending school; at Christmas, 1875, the number was 288,497, or 114,000 more children attending school. Of these 35,000 had gone into voluntary schools and the balance to Board schools. There were sixty districts in London in which there were no Board schools, but the Board visitors were none the less doing good work in such districts. Respecting the incidence of the rate, he reminded his hearers that Greenwich, which was the largest division embraced by the London School Board, while it paid a twentieth, received a tenth,—the City of London and St. George's, Hanover-square, contributing largely for the erection of schools in Deptford, although they had not one single Board school of their own.

**Southport Free Library and Art Gallery Competition.** — Competitors are asked to allow their designs to be suspended for another week, as there has been unavoidable delay in obtaining builders' estimates of cost for the satisfaction of the committee.

## DOINGS AT BRIGHTON.

*The Aquarium.*—Some additions and alterations to the Brighton Aquarium were opened on the 24th of June. Upon a piece of enclosed land below the Marine Parade, and to the east of the main building, has been erected a series of apartments which will afford greater facilities for carrying on the work of the aquarium, and above these a skating-rink, balcony, *café*, &c., have been constructed. The south-eastern corridor has been continued for a further length of 145 ft., and abutting on this additional length are several new apartments in modernised Gothic style. The new chess-room is 23 ft. square, the billiard or lecture room 59 ft. long by 22 ft. in width, and 15 ft. high; the smoking-room 23 ft. by 22 ft.; and there is also a room erected for performances of classical chamber music. The skating-rink has been constructed immediately above, and, with the new terraces, forms the roof of the new part of the building. It may be approached either through the terrace gardens or from the Madeira-road, and is distinct from the aquarium proper. The floor-space is some 150 ft. long by 50 ft. wide, and is laid with Claridge's patent asphalte. A light iron hand-rail runs round the parapet of the rink, lamp pillars and brackets being placed at intervals. Adjoining the rink are skate-rooms, lavatories, and a refreshment-bar, and an orchestral stand is in contemplation. In direct connexion with the aquarium is a balcony communicating with an elegant *café*. The balcony is 171 ft. in length, and about 15 ft. in width, projecting from the side of the cliff over the southern side of the rink. It is laid with encaustic tiles, and, being covered by a verandah, forms an agreeable promenade. A conservatory, which is not yet complete, is to be constructed at the east end of the balcony, and will be available for smoking and refreshment. The entrance to the *café* is from the balcony. This portion of the building is 55 ft. long, and the interior is decorated with plate glass, marble, gilding, and colouring in neutral tints relieved with black and gold. Messrs. Patching & Webber were the contractors.

*School of Science and Art.*—Sir Henry Cole, K.C.B., recently laid the foundation-stone of the new buildings for the School of Science and Art. The building is situated near the centre of the Grand Parade. A florid style of architecture has been chosen. When completed, the school will include an elementary art-room, 38 ft. by 32 ft.; an antique-room, 33 ft. by 22 ft.; painting-room, 22 ft. by 16 ft.; modelling-room, 20 ft. by 16 ft.; lecture-room, 31 ft. by 22 ft.; two science class-rooms, each 33 ft. by 16 ft.; also a laboratory, library, Board-room, professors' room, occasional class-rooms, master's room, and a ladies' room, as well as all the minor accommodation necessary. Mr. J. G. Gibbins is the architect, and Mr. G. R. Lockyer is the contractor. The cost will be between 8,000*l.* and 9,000*l.*

*A People's Park.*—Negotiations are in progress between the Mayor (Alderman H. Abbey) and the legal representatives of Mr. and Mrs. Benett-Stanford, for the acquisition by the Town Council of the piece of ground, about 40 acres in extent, in front of Preston-place, which for some time past has been the scene of the Polo Club's exploits, and the drill-ground of the local volunteer corps. The addition of such an open spot in continuation of the Steyne enclosures, St. Peter's Green, the Level, the grounds of Park-crescent, and situated in what will be in course of time the centre of the town, is viewed with great satisfaction.

*Proposed Rebuilding of St. Mary's Church.*—When, some short time since, it was decided to enlarge the chancel of this church, that was thought to be all that was necessary, and was, indeed, all that was necessary to meet the wants of the congregation; but an unfortunate accident which has occurred has raised so many misgivings as to the soundness of the structure that the advisability of pulling it down and rebuilding it has been seriously mooted. Messrs. E. Nash & Co., builders, of Hove, were selected to do the work of enlarging the chancel. A few evenings ago the old flat arch over the chancel was observed by the foreman in charge to be cracking. The workmen, who were engaged in erecting a portion of the walls of the new chancel, were at once called off, the arch almost immediately afterwards crumbling under the weight of the old pediment, and falling in. With it came the piers, a part of the old chancel which it was intended to leave, and a small portion of the northern end of the roof. The chancel piers stood until after the arch had fallen, when the pediment brought the upper part down. It would appear that the alterations had previously been effected to the chancel; and as the walls were found to be very roughly built with rubble work, Messrs. Nash did not pull them down so much as intended; but were, at the time of the occurence, engaged in building up the lower portion of the work of greater thickness to strengthen the piers. It is stated that, if rebuilt, the style will be Gothic instead of Classic, whether it be erected on the same site, or on that which adjoins it. It has been suggested that, instead of standing at right angles with St. James's-street, the new church should be rebuilt parallel with that thoroughfare.

*Widening of the Preston-road.*—Simultaneously with the formation of the grand Drive round the outskirts of the town, another great improvement (thanks to the liberality of Mr. Benett-Stanford, M.P.) is to be carried out, namely, the widening of the Preston-road, the plans for which (prepared by Mr. P. C. Lockwood, C.E., the borough surveyor) have received the sanction of the Brighton Town Council. That portion of the Preston-road which is to be widened is on the western side, at its northern extremity, just before entering the village from Brighton. It runs, in fact, from the grand old trees, once known as "the Shaw,"—beneath whose shade Brighton fashionable society in the early part of the century was wont to hold its picnics,—almost to the Black Lion (formerly the old toll-house), a distance of over 1,000 ft.

*St. Luke's School Church.*—St. Luke's School Church, situated at the corner of Islingwood-road and Park-road West, has been opened by the Bishop of Chichester. Mainly by the liberality of Miss Elliott and her family, and Miss Thompson, of West Hill Lodge, Brighton, who laid the foundation stone, sufficient subscriptions were gathered to justify the commencement of the work. This was done by Messrs. E. Nash & Co., contractors, of Hove, and by them was completed on the 25th March. Mr. W. White, of London, was the architect. A light building, in Early English style, whose interior measures 80 ft. long. 40 ft. broad, and 37 ft. to the ridge, and which can accommodate 450 persons, has been raised. One of Constantine's convoluted stoves has been procured to heat the building; a floor of blocks of wood on concrete, from which little or no noise arises when trod upon, has been laid, and rush-bottomed chairs and hassocks have been provided all over the church. In the brickwork over the porch is a carved emblem of St. Luke in stone.

## BUILDING ASSOCIATIONS IN AMERICA.

AT a Conference of the American Social Science Association, held at the College of Physicians on the 1st ult., a discussion took place on "Building Associations," resulting in the adoption of a resolution commending this Philadelphia institution to other communities. The secretary, Mr. F. B. Sanborn, stated that he had sent queries to members of the Association in different cities as to the peculiarities of living in those places. From William F. Channing, of Providence, R. I., a paper was received describing the peculiar conditions affecting the homes of operatives in that State. Rhode Island is a hive of workshops, and has an unusually large proportion of skilled mechanics. Many of these live in houses containing two tenements. This style of building is a Rhode Island institution. The houses are generally two-storied wooden structures, built for the occupation of a family on each floor. These are considered as respectable socially as separate houses, and, practically, the families are entirely independent of each other. Rhode Island was founded on the idea of individual freedom, while in Massachusetts a rigid organisation characterised its early history. This difference in early training shows itself in the different modes of living. Providence is a city of 100,000 inhabitants, with almost every dwelling house by itself and surrounded by a garden. People consent to live in blocks in Massachusetts town, while the passion throughout Rhode Island is for isolated houses.

Mr. Oliver H. Stratton, of Louisville, reported that the first organised effort in that city to establish what are commonly known as building or homestead associations was begun in 1868, and there are now thirty-nine associations of the kind there.

From other cities reports were received showing that building associations had been established and were being operated on a substantial basis in all parts of the country.

Judge Pence remarked that in his experience of ten years upon the Bench he had known of but one case of peculation in all the societies existing in Philadelphia. This peculiarity, he thought, was wonderful. The judge was forcibly impressed with the perfect safety of these investments. He believed that the ownership of homes made all citizens interested in the public welfare, and made each one feel that a responsibility rested upon him in advancing the general prosperity.

Mr. Lorin Blodgett suggested that the discussion be directed toward inaugurating such associations in New York, where a great necessity existed.

Dr. Harris, of the Sanitary Department of New York, agreed entirely in this view, and conceded to Philadelphia remarkable facilities for commerce and remarkable advantages for the investment of capital, because there the highest skill of any city could be obtained. He said a conference of New York capitalists and representative working men, with prominent building association organisers of Philadelphia, was projected, and he offered as the sense of the conference the following resolutions, which were adopted :—

"That the development and results of the system of home building, or home ownership, by the working men of Philadelphia and Wilmington, commends to our fellow citizens and the promoters of social and economical improvements in the cities and large manufacturing towns the agencies by which the success and benefits of the system have been attained."

"That among the most essential agencies and influences of this system we recognise :—1. A simple method of offering adequate means and prudently guarded conditions for enabling working men and the wage classes to acquire ownership of their homes. 2. The operation of care and responsible concern for the co-operative, safe using, and control of the self-accumulating funds from which loans are offered for the purchase of homes. 3. Most important of all, agencies to promote the desire and efforts of working men's families to obtain and own their houses, we recognise that general diffusion of information of the methods and benefits of enjoying self-made homes and the ownership of them as real property."

"That in cities and villages no less than in rural communities the working men need to be encouraged to become freeholders and owners as respects their family dwellings, and, if ownership is not practicable, that the relations of tenants and families should be such as to interest and help the tenant to make the tenement as perfect and attractive a home as possible."

## SANITARY CONDITION OF RAILWAY PROPERTY IN SOUTHWARK.

A CASE came before Mr. Partridge, at the Southwark Police Court, which disclosed the fact that railway companies sometimes prove themselves to be culpably negligent as to the sanitary condition of the property under their control. Some time ago the South-Eastern Railway Company became the owners of several small dilapidated blocks of cottages in the neighbourhood of Gravel-lane, Borough, for the purpose of making the junction line, now nearly completed, for connecting their railway with the London, Chatham, and Dover line at Blackfriars. The following statements show the disease-breeding character of the company's property. Mr. Errington, the sanitary inspector of the St. Saviour's Vestry, summoned the occupiers of six of the houses in Glasshouse-yard, Gravel-lane, to show cause why the houses should not be closed, being in such a filthy and dilapidated condition as to be unfit for habitation, and injurious to health. He stated that they contained three rooms each, and were inhabited by from ten to a dozen men, women, and children in every house, very poor, and chiefly Irish. The roofs of some of the houses were partially off, the shutters and doors gone, and the flooring, balusters, and nearly every bit of woodwork torn away for lighting the fires. The walls were in an extremely filthy state. The only water-closet was in ruins, and unfit for use, and the small yards unpaved and very dirty. The inmates had been turned out by the railway company some time ago, but as the company did not require the houses after that, they were taken possession of by the present occupiers, who not only paid no rent, but refused to leave. The medical officer of the Saviour's District Board of Works said that the houses were in such a filthy condition as to be totally unfit for human habitation, and unless they were soon emptied and closed, the whole neighbourhood would be in danger of fever. He added that he could not think how human beings could live in such dens. One of the occupants of the houses appeared, and objected to being evicted, and, admitting that he had not paid any rent for three months, said the houses "were quite comfortable." The magistrate ordered all the houses to be closed forthwith. It may be asked, why did not the railway company at once demolish the whole of those uninhabitable places the moment they were empty, instead of allowing them to stand and be taken possession of, as above stated?

## SCIENCE AT SOUTH KENSINGTON.

THE Department are now doing good work with the Loan Collection of Scientific Apparatus, in the South Kensington Museum. The apparatus is put in action at intervals, and explanations are given.

Programmes for the week may be had showing what is to be done.

Arrangements are being made for the delivery of Lectures in the Conference-room on the various Scientific Apparatus in the Collection on *Saturday and Monday evenings* at eight o'clock, to which visitors to the Museum will be admitted, so far as space will permit. Men of high class have agreed to lecture.

## BRISTOL STATION OF THE GREAT WESTERN RAILWAY.

A "TRAVELLER FROM ABROAD" wishes to know who is responsible for the architecture of the new station, now in course of erection for the Great Western Railway Company in Bristol, and indulges in some lamentably unfavourable comparisons with structures of a similar character recently seen by him in other countries. We do not wonder at his despair and horror. The style of the station in question is Pseudo-Gothic of the commonest and most vulgar kind, utterly wanting in refinement and knowledge. We cannot answer his question. The shareholders, however, ought to learn at the next general meeting who it is who is thus wasting their money. An ornament (?) which runs round the walls of the refreshment-room, midway, might be safely worshipped,—it is like nothing on the earth or in it.

## MANCHESTER SOCIETY OF ARCHITECTS.

THE Manchester Society of Architects has for some years given prizes to be competed for by the students attending the classes of the Building Trades Institute.

The competition was held at St. John's Church Schools, in Garside-street, in the presence of the honorary secretary of the Society, and the prizes were awarded in accordance with the report of the committee. We learn from this that,—

"The competition took place on April 25th last, in the presence of our hon. secretary. The students were allowed about two hours for making the different drawings, after which they were collected by the teacher.

Twenty-one drawings were submitted by different students, of whom eighteen belonged to the elementary class, and three to the advanced class.

The number of questions which must be answered, either by description or drawing, was fixed by the instructions at three. Out of the number of students thirteen either answered or attempted to answer more than the three questions. Many of the answers were wrong; but altogether the attempts showed that the students really thought of what they were attempting to do."

The prize of two guineas offered by the Society was given to Lorenzo Benson; the prize of one guinea, placed at the disposal of the Council by Mr. Bennett, architect, to John Clark; and the prize of one guinea, given by Messrs. Holden & Son, to J. S. Richardson.

**Area of Exhibition Buildings.** — Dr. D. G. F. Macdonald writes :—As considerable misapprehension exists respecting the area of the Centennial Exhibition buildings at Philadelphia, and as most persons are fond of comparing similar structures, a statement of the relative space occupied by each may interest the public. The area of the main exhibition building at Philadelphia, exclusive of annexes, is 21½ acres; of the Sydenham Crystal Palace, 14 acres; the Paris Universal Exhibition building occupied 11 acres; the New York Pavilion, 4 acres; the Dublin one, 6½ acres; and the Hyde Park Crystal Palace of 1851, 17½ acres. The five principal exhibition buildings in Philadelphia extend over 48 acres, and the fenced-in part for exhibition purposes comprises 236 acres of Fairmount Park, the most beautiful I ever set eyes on, containing about 3,000 acres. Our American cousins do everything on a grand scale, and the outlay for the great national enterprise of 1876 represents about 1,700,000*l*.

## "PICTURESQUE EUROPE."

UNDER this title Messrs. Cassell, Petter, & Galpin have commenced the publication of what promises to be a very charming work. The numbers already issued relate to the British Isles. Nearly every page is illustrated by a wood-cut or steel engraving, and the descriptive particulars are written by authors supposed to be acquainted with the different localities. As a specimen of the woodcuts, though by no means the best, we give one of the views which accompany the account of "Warwick Castle," lately burned and now restored, and we take a passage from the letterpress connected with it :—

"The Castle, as a glance will show, is not the work of one age, but has been patched up and altered, and renovated from time to time. Of the 'donjon' of Ethelfleda, daughter of Alfred; of the buildings of Turchill, its last Saxon lord, nothing remains. Ruined in the wars of the Barons, it was almost rebuilt towards the end of the third Edward's reign; but after the fall of its princely owner, Warwick, the king-maker, its next three possessors died by violent deaths, and its walls became dilapidated under the reign of the Tudors. Sir Fulke Greville (created Lord Brooke by James I.) restored it at great expense, 'making it the most princely seat that is within the midland parts of this realm.' His restorations and yet later alterations have almost obliterated the earlier work in the upper part of the Castle: but the sub-structure, with its massive vaulted roof and clumsily-moulded octagonal pillars; Cæsar's Tower, with its machicolated battlements; the entrance-gate and barbican, with their double portcullis—all the work of Thomas Beauchamp, in the fourteenth century—are still perfect, as is the picturesque Guy's Tower, which crowns the highest part of the rock, and is, perhaps, of slightly later date than the rest.

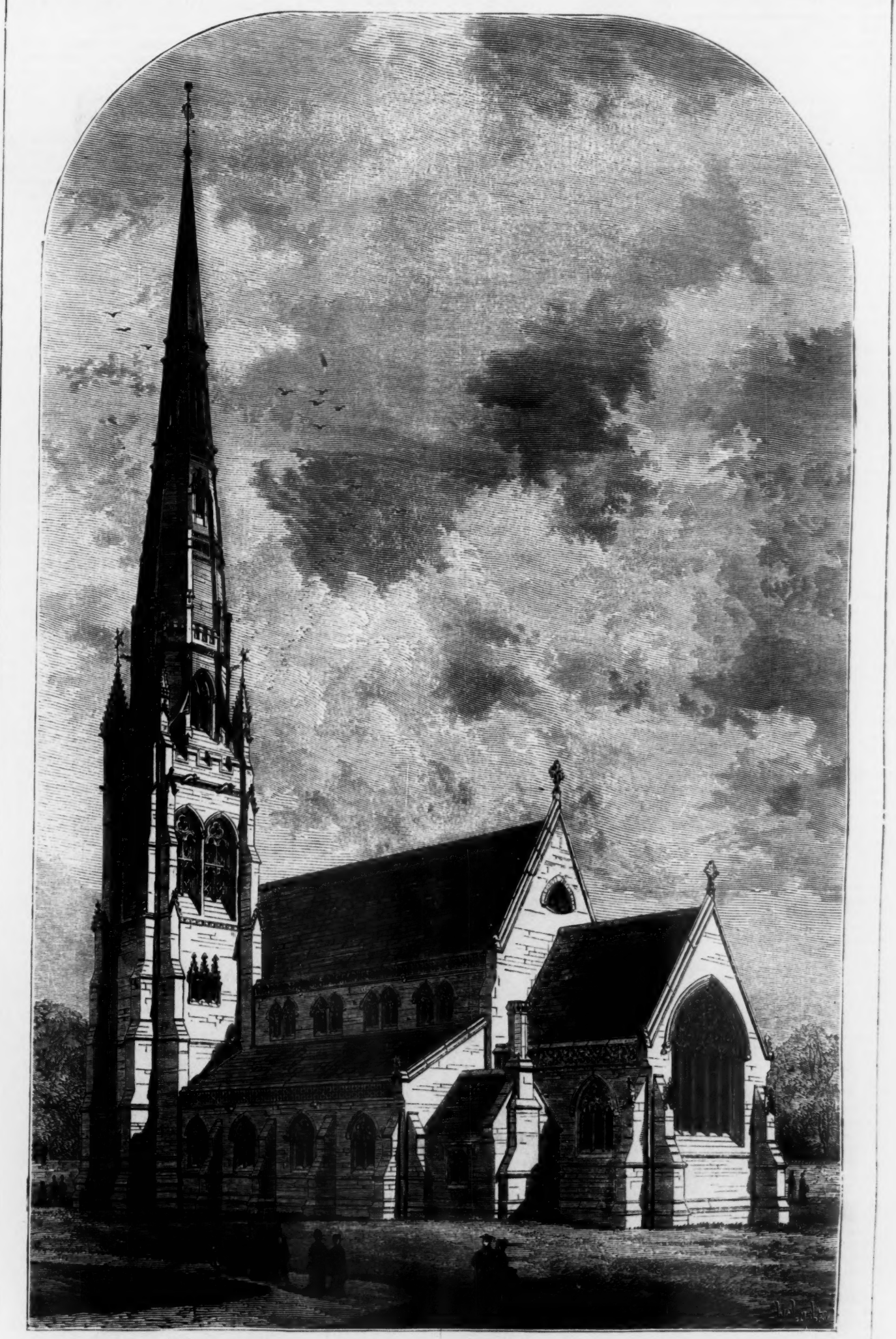
Few dwellings in Britain are more closely connected with the most stirring scenes in English history. Here was the home of a line of warriors, whose swords did service in many a fight against Scotland and France. Here lived the 'Black Hound of Arden'; and hither he brought the miserable Gaveston to meet his fate on Blacklow Hill. Here also lived the 'father of courtesy,' Regent of France, and guardian of Henry VI.; here open house was kept by the king-maker, who fell on Barnet field, 'his glory smeared in dust and blood'; and after him came the ill-fated, 'false-fleeting, perjured Clarence,' and, in the next century, John Dudley, the Lord High Admiral, whose head, like that of the previous owner of the title, fell on the scaffold. Since then more peaceful endings have been allotted to the Earls of Warwick, though the title has twice become extinct.

We must not linger in the interior of the Castle, tempting as that still is, though sadly shorn of its choicest treasures by the fire which raged in the eastern part in the year 1871, when the library, the baronial hall, with its magnificent collection of armour, many valuable pictures and ornaments, were almost wholly destroyed.

From the home of the Earls of Warwick turn now to their last resting-place. The antiquity of the town is still indicated by the four streets crossing one another near the middle at right angles. In the northern of these is the parish church. From a distance its general proportions and its lofty pinnacled tower are remarkably effective, but it is disappointing on a nearer view, from its defective details. The reason of this is at once obvious. It is a Gothic building of the reign of Queen Anne. The town suffered terribly in the year 1694, from the ravages of a fire, in which the western part of the church was destroyed. As the architects of that day were masters of proportion, but without the slightest sympathy with or understanding of Mediæval details, the result of their attempt to rebuild in the original style is what might be expected. In our time the case is exactly reversed. It never seems to have struck our architects, as a rule, that in planning a great work they have not only to satisfy a material want, but also to embody a poetic conception. The consequence is, that they exhibit learning without genius, imitative but not creative power; and we get ill-composed structures covered with details so incoherent that they might be termed 'scorbutic,' were they not by themselves beautiful."

We should have preferred a little more order in the arrangement of the subjects. North Wales follows Eton, and Warwick North Wales. Doubtless, however, the publishers could give a reason.

WARWICK CASTLE, FROM THE WEST.



A TERRA-COTTA CHURCH: PLATT CHURCH, NEAR MANCHESTER.—MR. EDMUND SHARPE, ARCHITECT.

## PLATT CHURCH, NEAR MANCHESTER.

TERRA COTTA.

IN the course of a paper on the adaptability of terra cotta to modern church work, by Mr. Sharpe,* an account was given of a church erected in this material, from the author's designs, at Platt, near Manchester. To illustrate what was then said, we now give a view of the church, as promised. Mr. Sharpe reminds his readers that this design was made in the year 1844,—that is to say, thirty-two years ago, and, therefore, very early in the Gothic revival,—and says, should you find any shortcomings in this design, you must put them down rather to the early period at which it was made, than to any incapacity of the material to produce a different result.

The church has clustered piers, floriated pier capitals, and moulded pier arches. It has a large five-light east window of flowing tracery, a diapered parapet to the aisle and clearstory walls, and a tower and spire, 170 ft. high. The whole of the exterior is of terra cotta, the coursed walling being of 5-in. blocks. The backing of the walls is of brickwork, and the interior surface is plastered throughout. The spire springs from an octagonal lantern of particularly light work, which has suffered from a cause that is noticed in the paper. Altogether he thinks he is right in holding this tower and spire, considering the time at which, and the material of which it is constructed, to be a very remarkable work, and deserving of more care than it has of late received from those who have, under the Lord Chancellor, the charge of it. The whole work has been treated, as will be seen, as a work in masonry, and very few of those who live in the populous neighbourhood in which it stands are aware that it is not so.

* See p. 553, *ante*.

## THE PRIORY OF ST. JOHN OF JERUSALEM, CLERKENWELL.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON the 10th ult., Mr. G. H. Birch conducted a large party of the Architectural Association to the scanty and much-mutilated fragments which now remain of the Priory Church of St. John of Jerusalem, Clerkenwell. The visitors assembled at St. John's Church, situate in the somewhat out-of-the-way close, St. John's-square, a locality teeming with clock and watch makers, jewellers, enamellers, gravity-escapement makers, and, in short, with almost an infinity of tradesmen engaged in the manufacture of horological, meteorological, and mathematical instruments. This somewhat sequestered place (so far as vehicular traffic is concerned, for of pedestrians there are a goodly number) is approached from Smithfield Bars by a narrow street known as St. John's-lane, at the top of which is St. John's-gate. It is also approached from St. John's-street-road by a short and narrow thoroughfare called Albemarle-street, and from Aylesbury and Red Lion streets by two or three narrow courts or entries. The comparative seclusion of the "square" is about to be rendered a thing of the past, for the new street from Oxford-street to Shoreditch, now in course of formation by the Metropolitan Board of Works, will cut obliquely across it, about equidistant between the church and the gatehouse, necessitating the demolition, amongst other buildings, of the house on the west side of the square, known as Burnet House, at one time occupied by Bishop Burnet. St. John's Church, which has its west end abutting on to the east side of the "square," and its east end overlooking a churchyard between it and St. John-street-road, presents (as seen from the west end especially) a more than usually bald and ugly "churchwardenesque" appearance, and many of the visitors were loth to believe that it could possibly be the appointed *rendezvous*. We never look up to the insignificant clock-turret of this church without being reminded of the proverb to the effect that "the shoemaker's wife is always the worst-shod woman in the village," for here, in the very midst of a busy centre of horological industry, the church clock, having got out of repair, stopped at twenty minutes to two one morning or afternoon, and for several years (three or four at least—perhaps it is ten or twelve years ago now) sought to persuade the inhabitants and passers-by that "*tempus fugit*" was an aphorism of the past, for the clock-hands remained stationary, neither retreating nor advancing. The church, however, although appearing externally to be so unpromising to the antiquary, is built over what remains of a very interesting crypt.* Four bays of this crypt remain, the two easternmost ones being of the Early English period, while the two westernmost bays are of Transitional work, the division between the work of the two periods being well defined and plainly visible. The visitors having passed through the church descended into the crypt, which is so damp and noisome that even architects and archæologists would not care to remain in it very long.

*The Church.*—Mr. Birch read a paper, in which he said:—The church in which we are now met is one which is not very well known to the generality of ecclesiologists, the exterior giving no clue to what is to be found in the interior, so completely has the hand of the destroyer eradicated every vestige of antiquity from its principal front. Indeed, generally speaking, nothing remains of the original magnificent church of the military order of the Knights of St. John of Jerusalem but a few fragments in the church, the beautiful Early English crypt, and the gatehouse. The order to which the buildings belonged was one which owed its origin to the Crusades; more fortunate than their contemporaries the Templars, they not only escaped their destruction, but were enriched by their possessions. They were called the Knights Hospitallers of St. John of Jerusalem. When Jerusalem was taken from the Saracens, vast numbers of pilgrims flocked to the Holy Sepulchre and to other places of the Holy Land, and one Gerardus, associating himself with others of like mind, devoted himself to the most useful and humane intention of harbouring and sheltering the pilgrims, and furthermore of defending them from insult in either going or coming. The Knights Hospitallers adopted a black habit with a white cross of eight points. Godfrey of Boulogne instituted them as a regular order, and they soon increased in wealth and numbers. In England they attained to great power and position, and on the loss of Jerusalem the military knights had to settle first at Rhodes and then at Malta, and took their names severally from those places. They never lost their title in England, but retained it to the Dissolution. Their prior ranked as the first baron. More popular than the Templars, they yet incurred the hatred of the vulgar, and in 1382 their house at Clerkenwell was burnt by the Communists of that period. Garnerius de Neapoli was their first prior, and Sir William Weston their last. Their revenues, according to Dugdale, amounted to 2,385*l.* 12*s.* 8*d.* The order is not extinct in England, and, I am told, never has been. This house in Clerkenwell (near unto Clarke's Well) was founded by Jordan Brisset and Muriell, his wife, A.D. 1100, in the reign of Henry I. Ten acres of land were purchased from the neighbouring priory of St. Mary, twenty acres in the parish of Willinghale, Kent, being given in exchange,—an early record of the value of land in London. When Heraclius, or Araclius, patriarch of Jerusalem, was in London, he dedicated the "chyrche of ye Hospitall of S. John's, Jerusalem, to ye honor of S. John Baptiste, in ye yere of Christ 1185, on the 6th ides of Merche. Ye same dey was dedycatyd ye high altre and ye altre of S. John Evangelist." Joseph de Channey, prior (1274-1280) built a chapel, and William de Henley, prior, erected a cloister between 1280 and 1284. The church was Transitional, of a very fine type, judging from remains of capitals discovered from time to time, and still to be seen, I believe, in the south wall, next Jerusalem-court. I have alluded to the church and buildings being burnt in 1381-82. It is recorded that they were burning for seven days; but immediately after this disaster they were rebuilt, not being completed until 1504, John Docwra being then prior. This rebuilt church was, of course, Perpendicular, the earlier remains having been incorporated, and it consisted of a nave with aisles, a great bell-tower (of which John Stowe has the following curious entry: that it was a lofty and beautiful steeple, curiously graven, gilt, and enamelled, to the great beautifying of the city, and passing all other that he had ever seen), and a choir with aisles and side-chapels. Of all this scarcely anything now remains, the present church being only a portion of the choir,—the crypt, now bricked up, having extended westward. The width of the crypt is 16 ft. 3 in., the height being 12 ft. A compartment on the south side was bricked up in 1793, and is the vault of Simon Michell, who so utterly destroyed the church and disguised it in its present garb. The crypt, although now partly, if not entirely, subterranean, was not so formerly, Hollar's view showing the entrance. The central portion of the crypt is of four bays, the two western ones being Transitional, and the two eastern ones Early English, and the work deserves most careful examination, for the voussoirs of the arch-ribs, instead of being cut to a curve,—*i.e.*, following the line struck from a centre, are each of them straight, the necessary curvature being obtained by making these voussoirs so small that their want of curvature is scarcely perceptible. My attention was drawn to this curious fact by Mr. Pettit Griffith, F.S.A., when he read a most valuable paper on this Priory Church before the London and Middlesex Archæological Society, in whose "Transactions" it is published. In 1854 the bases of the columns were exposed, in an excavation made for that purpose, and were found to possess some curious characteristics. The real floor is 1 ft. 5½ in. below the present one, a layer of clay having been spread over it to prevent damp from rising. The two western bays were lighted by a narrow lancet window on each side. The wall is 4 ft. thick, and is considerably splayed. In 1860 the coffins were removed into the side-aisles, and the openings bricked up, thus considerably curtailing the crypt of its proportions; and an Early English trefoil-headed doorway which existed on the west side of the north compartment was obliterated from view. In this crypt was buried the body of the girl who figured in 1762 as the "Cock-lane Ghost,"—a singular imposition believed in by many at the time. History repeats itself, however, and the unquiet spirit of the Cock-lane ghost manifests its presence by the knockings and scratchings so extensively indulged in by the modern spiritualists. The church above the crypt has been so completely gutted that little remains to be said of it. The fragment which had been left of Docwra's choir was tinkered up and "Classicised" by Michell when the church was made a rectory by the Commissioners for building fifty new churches in London and the neighbourhood. When Mr. Pettit Griffith repaired the church in 1845 he noted the following particulars. When the plaster was removed from the inside of the east wall and central window it was discovered that Docwra's masonry still existed from the ground to the middle of the said window-arch,—about 27 ft. high. Above that was the brickwork of Michell's time. The window is in the same state as shown in Hollar's view. The mullions are perfect, but the cinque-foil cusping is all destroyed. When the pews against the south wall were removed, it was found that portions of the former church had been used as a foundation to them. These consisted of moulded vaulting ribs, parts of shafts and groining, and capita's of clustered columns, coloured and gilt; these showed the masons' marks. The floor of the church is 14 in. above the old level. The south wall had been rebuilt by Docwra on the remains of the Early English wall, which still remains some few feet above the floor, showing the narrow splayed openings of the original windows, and a doorway opening into Jerusalem-court. Docwra's wall contains large Perpendicular windows, above which Michell has rebuilt the wall. The north wall was also rebuilt by Docwra, and shows several large windows. A very beautiful angle capital was found built in in this wall.* The arms in the east window are those of Prior Botyler, a chevron between three combs. The establishment was suppressed by our English Caligula in 1541, but was not destroyed at once, like so many other splendid fabrics. It was converted into a repository for military stores. The king's tents were kept here, and so remained until 1550, when the so-called Lord Protector Seymour, Duke of Somerset, caused the nave and side-aisles, and the great bell-tower, to which allusion has been made as being richly graven, gilt, and enamelled, to be blown up by gunpowder, in order to use the stone in building Somerset House in the Strand, and the porch of All Hallows', Grace-church-street. This was not the only sacred building which fell into the devouring maw of this Protector,—the cathedral itself was not respected. The part of the choir that remained, with some side-chapels, was closed up at the west end, and otherwise repaired, by Cardinal Pole, in the reign of Queen Mary, and Sir Thomas Tresham, knight, was made prior; but it again

* Illustrated in the *Builder* some years ago.

* All these fragments have now entirely disappeared.

was desecrated by Elizabeth. The buildings of the Priory had been sold by Henry, together with the site, circuit, and precinct of the hospital, to John Dudley, Viscount Lisle, Lord High Admiral, in consideration of his services, and for 1,000*l.* sterling,—no inconsiderable sum in those days. James I. granted the site, described as containing one great mansion-house and one great chapel (the mutilated choir), to Ralph Freeman and to his heirs in free and common soccage. Then it became the property of Lord Burleigh, whose daughter married Bruce, Lord Elgin, by whom the choir was used as his private chapel until 1706, when it was again sold, and was finally bought by Simon Michell, in 1721. Its subsequent history has already been noticed. When Michell bought the choir, the north aisle had been turned into a dwelling-house, and the upper part of the south aisle was used as a library. It is very much to be desired that sufficient money were forthcoming to once more exhume, as it were, the treasures still hidden in its mutilated walls, and to more perfectly reveal Prior Docwra's choir.

*The Gate-house.*—Adjourning to the gate-house (locally and generally known as "St. John's Gate"), which has been much mutilated to serve the purpose of a tavern, the visitors passed up into "Dr. Johnson's Room," where Mr. Birch read the following short paper:—This structure must often have impressed you when you passed through its noble archway, as Boswell says it impressed Dr. Johnson when he beheld it for the first time. This old gate, apart from its other associations, will always be inseparably linked with the name of that great man, for here he was wont to shut himself up in a room assigned to him, and to allow no one to disturb him but some compositor or "printer's devil" waiting for "copy," for the time-honoured publication of "Sylvanus Urban," yclept the *Gentleman's Magazine*, was printed and published within the walls. Of course a gate-house stood on this spot in 1100, when the hospital was first founded, but that was probably burnt down during Wat Tyler's abortive attempt at Communism. The present structure, like the choir of the church, was rebuilt by Prior Docwra, the last prior but one before the Suppression. The walls are about 3 ft. thick, and are of brick faced with Reigate stone. The ground plan consists of an arched opening with rooms on the east and west sides. Towards the north or St. John's-square side two towers project from the face, as well as two towers on the south or St. John's-lane frontage. The archway, being thus recessed, has a great appearance of breadth and solidity. The arch was, until a few years ago, partly filled up by a wooden erection serving for a billiard-room, greatly curtailing the height of the headway, and quite ruining the appearance of the entrance. This erection was put up when the gatehouse was converted into a tavern. The original ground level is 3 ft. below that of the present pavement. On the south front over the archway are sculptured five shields in foliated panels,—in the centre France and England quarterly, surmounted by a crown; on each side the arms of the priory, a cross; beyond, Docwra's arms, a chevron engrailed between three roundels cross in chief.

"Numerous discoveries have been brought to light during the last thirty years in excavating for drains, foundations of new houses, &c. When the Metropolitan Building Act of 1845 came into operation, the gateway had a narrow escape. It was condemned as dangerous, and it was proposed to 'compo' it." However, this calamity was averted, and in 1846-47 the stonework was reinstated, battlements added to the north front and partly to the south front, and the angular turrets partly rebuilt, with new windows, &c., under the direction of Mr. Pettit Griffith. "Among the spoliations which have been effected in order somewhat to fit the gatehouse to serve as a tavern, the projecting tower in St. John's-lane, on the east side, was cut through and supported at the angle by a cast-iron column, totally disfiguring the south front. The original stone mullions of the windows in the large room over the gateway have been removed, and miserable deal mullions substituted. All these alterations were effected many years prior to the restorations of 1846. In 1865 the freehold was purchased by Mr. Wickens, in whom the old gatehouse found a friend anxious to retain the fabric as far as possible in all its integrity. With this view, in 1866, 350*l.* were expended upon its further restoration. The modern staircase on the west side was cleared away, and the oak staircase in the north-west tower (this staircase winds from top to bottom with solid oak steps and an oak newel) was restored, also the old stone doorway in the same tower, formerly the entrance to Cave's printing-office, was raised 3 ft. in height, the continual raising of the street paving having shorn this doorway of its fair proportions."*

Once more the gate has changed hands, and after all its vicissitudes, belongs again to the very order of the Knights of St. John of Jerusalem who formerly possessed it. Sir Edmund Lechmere has purchased the building, and as his name is as a tower of strength for the preservation of ancient buildings, we may safely leave this old building in his hands, in quietness and confidence as to its future. We may add that one of the upper rooms is now in course of restoration under the direction of Mr. Norman Shaw, for the purpose of serving as a chapel.

The afternoon's proceedings were brought to a conclusion by a visit to the interesting Chapel of St. Etheldreda, Ely-place, Holborn, now in course of restoration by Messrs. Whelan & Young, with Sir Gilbert Scott as consulting architect. The walls being now stripped of the galleries, lath and plaster, &c., a good opportunity is afforded of realising what the building must have been before its successive mutilations. The chapel is a good specimen of Decorated work, and will well repay a visit at the present time. We have so recently † referred to it in detail that we need say nothing here.

* W. P. Griffith. † See p. 311, *ante*.

## FIRE-PROOF TOWNS.

IT is curious that, while we have such disastrous and numerous fires in this and neighbouring countries and in North America, there are cities and towns not far off absolutely fire-proof,—as Buenos Ayres and Montevideo. In Buenos Ayres, a city of 250,000 inhabitants, a poor charwoman sleeps with her children with more safety from fire than the Princess of Wales and the Royal children,—who have been in danger from a fire taking place in Marlborough House, and the Prince being present first directed the children to be removed to a distant part of the house, and then ascending to where the fire was, he fell over the joists. Sandringham has also been on fire since his Royal Highness purchased it. Yet it is so easy to make houses fire-proof, using wood, not to speak of iron, that the older architects and builders of Buenos Ayres and other towns there probably never knew they were building fire-proof! They neither use iron nor the arch; but simply, that province being without trees, they have to use the hard woods from far up the river, which are therefore dear, and so they use little, this being the whole secret.

A hundred walking-sticks may be placed 2 in. from each other, and yet a fire cannot be made of them if they are spread gridiron-fashion, say, across two little walls of brick and a fire kindled below; it will burn through, say four of the sticks which are in the flames, but there it ends. In the same way, if a cartload of shavings and pieces of pine were provided, and half be packed under the best bed in a Buenos Ayres house, and the other piled over it and set on fire, the bonfire would eventually burn through four or five of the joists above, and the bricks and tiles of the floor would fall through; but there it would end, the house could not be set on fire.

The houses are built as follows, the material being brick. Alike each floor and the roof (which is flat) are supported by joists of hard wood about the same distance apart as in this country; across these are laid rails of the same (3½ in. by 1½ in.), and the space between these is bridged over by thin bricks 13½ in. long; another layer of bricks is then laid, and generally on this a layer of tiles. The roof is exactly the same, but has a slope of 1 in 30 or 35. Then the doors and windows have no boxes, but simple frames, which are set up on building the walls and built in; and there is no lathing, nor wainscot, nor skirting of the bottom of the walls. And all the wood is of the hard and hardish kinds, the doors and windows and shutters of cedar, slow to ignite.

The modern houses of Buenos Ayres are pretty much like those of London, Bath, or Edinburgh, nor would any one see hardly any difference. It would be easy, therefore, to adopt the same way of building here with the necessary slight modifications. The ends of the joists in the walls would probably rot in course of time, from external damp penetrating if they were not of wood indestructible from damp, like in the River Plate towns, where, in the experience of the Spaniards, which extends to nearly two centuries, it does not rot in the damp in that time. Hence, if they were only of oak in this country, a *battre*, like a cornice, should be built at the top of the walls of each story on which the ends of the joists are to rest, so as to sustain them if their ends, built into the wall, ever rotted. The projection, stuccoed over, would form a cornice; but the joists could easily be of iron instead, this being the cheapest country for iron in the world.

The lathing of the ceilings and walls should be done with iron ribbons, and the slates be supported by sheet iron, to which they could be fixed by small screws and nuts. Then the coldness of the floors should be obviated by a lining of black poplar, ¼ in. or ½ in. thick, and carpets above; but all the rest to be of oak or teak, or other hard wood, both hard and wanting in that resin which makes pine so combustible.*

Instead of filling our houses with combustible pine it would surely be better thus to copy the Spaniards in their fireproof towns,—Buenos Ayres, Monte Video, Rosario, Parana, &c. No human lives are lost there by fire,—no priceless works of art! *We* not only make combustible private dwellings, but hospitals, infirmaries, lunatic asylums, sailors' homes, and the like, and the inmates are burned alive, or they are nearly killed by the bursting of the cistern on the roof, as in St. George's Hospital, the other day. Lord Clyde returns from India, from the mutiny, and is nearly burned alive the first night he reaches a friend's mansion in the North. A noble mansion is passed in the train, in England, and some one says, "That is the Earl of ——'s,—the new castle. The old one was burned down, and the Dowager Countess was found a cinder"; and a Buenos Ayrean who listened thought it strange that an English earl had not a house where his old mother would be safe. Even royalty is not safe. Theatres, halls, and churches are built combustible, exposing us to frightful risks, and the money losses are tremendous. Mills, factories, ironworks even, in the country where iron is so cheap, are built combustible, and then *insured*.

ALMA.

* In Buenos Ayres they use carpets in winter, which are replaced by cool mats in summer. For greater warmth, however, and probably as now cheaper, some builders have latterly put in pine floors on the hard-wood joists, instead of bricks and tiles, which is bad policy, and these new houses are not included when I state that the city is absolutely fireproof.

## SHRINKAGE OF TIMBER.

SIR,—IN your report of the discussion at the Architectural Association which followed the reading of Mr. J. Douglass Mathews's paper, "Modern Improvements in Housebuilding," Mr. Phené Spiers says, "As to the shrinkage of timber in modern houses, he did not know how it was to be prevented, seeing that the bulk of the timber used in modern work was brought wet from the dock, and cut up and used often without the slightest attempt being made to 'season' it," and he proceeds to explain that the practice in America is "to place the timber for about three weeks in a hot room having a temperature of about 200°," and that "to a slight extent this precaution was adopted in this country, it being the practice of some builders to place their timber in the boiler-house, where it was subjected to a temperature of 90°."

May I suggest that in the discussion of these questions it would be very useful for the avoidance of vagueness to adopt the builder's nomenclature, and to confine the use of the word "timber" to the structural woodwork of the carpenter, and to call the wood of the joiner "deal," or "stuff"? Many persons, on reading Mr. Spiers's remarks, would be led to believe that our cousins desiccate their joists, plates, roof principals, and rafters; but I do not think that this can be his meaning: if it be, I think he should be cautious in recommending us to adopt the same course, as there can be no doubt that "timber" thus dealt with loses a large quantity of its power of resistance to cross strain, is rendered less lasting, and becomes so brittle that, to use a carpenter's phrase, when it breaks, it breaks short like a carrot.

Doubtless, wet timber drawn out of the floating docks, cut up, and fixed in the building, and the work hastily carried on to ultimate completion, is the source of many ceiling cracks, and fissures at the junctions of quarter partitions with brick walls, and (in London with the Building Act-encouraged V gutters) is the cause of

many leaky roofs. But here again the terms should not be confounded. Wet timber is not necessarily unseasoned; in fact, timber cannot be properly seasoned without the water process. The true remedy is less haste in building, nor let the architect cast all the blame of this on the hurry-skurry of the times. Many a client would adopt his advice to erect the building in carcass, and allow it to remain in that state for a season open to the free wind to dry both walls and timber, not to be finished until the drying process is completed. But this does not suit us. We, like all the rest, wish to get the job finished and have our money, even if it be at the sacrifice of some efficiency.

If the building must be pushed on at all hazards, then you should use as much as possible for your constructional carpentry the stuff of the joiner, in the shape of planks, deals, and battens; these, being imported in their converted forms, are not brought wet from the docks, but are comparatively dry, but, as compared with timber imported in the bulk, they are neither so well "seasoned" nor are they cut from trees which supply wood of so vigorous a growth or so lasting a nature: they are perhaps a little tougher than timber, but not so strong.

For joiners' work, the objection to desiccating the wood is not so strong, as it has no strain to bear, and is in great part protected from weather, but for joinery the wood will be much sounder and more lasting if dried by a more gradual process than that suggested by Mr. Spiers.

The want of knowledge sometimes displayed by architects on this subject is lamentable. I remember reading in your pages the remarks of a gentleman to the Architectural Association accounting for shrinkages in doors and splittings of panels in outer framings, by stating that the timber for these was drawn wet out of the water of the docks, where it floated, and was immediately cut into door thicknesses, and put together. His great mistake was in imagining that doors are made out of logs, whereas the commonest joiner could have informed him that the framings, even of the most scamping of Jerry-built houses, are made from deals which are stacked on land in the docks, and have never been in the water after their conversion at the port of export. L.

## OBITUARY.

*Mr. Matthew Noble*, the sculptor, has just died, at his residence, in Kensington. He was born at Hackness, near Scarborough, in Yorkshire, in the year 1819, and was a pupil of the late Mr. John Francis. Among his best-known works are the statue of the Queen, in St. Thomas's Hospital; the statue of the late Lord Derby, in Parliament-square, near Westminster Hall; and the statue of the late Sir John Franklin, in Waterloo-place. Twenty years ago he was successful in the competition for the Wellington Monument at Manchester. Latterly he has been engaged in executing posthumous memorials. Last year he exhibited at the Academy busts or figures of the Rev. Henry Venn, the late Bishop of Manchester, and the late General Sir James Yorke Scarlett. This year he has exhibited the late Mrs. Lionel Astley and the late Mr. Hope Scott, and the latter work is to be placed at Abbotsford. In October, 1874, Mr. Noble had the misfortune to lose a son of great promise, who was expected to make a prominent mark in his profession, which was also his own. Last year Mr. Noble lost another son, in the Abbott's Ripton railway accident, and this double bereavement has accelerated his death.

*Mr. Robert Morris*, a Liverpool contractor, died at his residence, 42, Bedford-street, Liverpool, on the 23rd ult., after six days' illness. He had for many years carried on the business of a contractor, and his name will be remembered in connexion with many works of importance, including the Berwick and Kelso Railway and the Neath Valley Railway. Among other large works which were entrusted to him was the building of the Prescot Workhouse, and he was associated with Mr. Jesse Hartley in some important dock works. Mr. Morris was much esteemed for his charitableness of disposition and kindness of heart. He was in his fifty-ninth year.

*Mr. Richard Clarke*, the Borough Valuer of Birmingham, is dead. He was appointed Borough Valuer in 1853, and parish-surveyor in 1867.

*Mr. C. Hide*, architect and surveyor, died at his residence, 2, Colonnade, High-street, Worthing, on the 20th ult., at the age of 66. He was a civil engineer by education, and was senior partner in the firm of Hide & Patching, auctioneers, &c. He filled the office of Town Surveyor for a period of about thirty years, commencing his duties under the old Town Commissioners, and continuing them under the Local Board. During his surveyorship, the drainage scheme was carried out under his personal superintendence. He built the town-hall; and several of the terraces and villas in Worthing were designed by him. A year or two ago he patented a new kind of cement called "Frescoa," for facing the outside of buildings in imitation of different kinds of stone.

The *Rev. Walter Field*, rector of Mersthan, Surrey, has died from fever caught at Rome. He was long connected with the Church Building Society, and was the founder of the *Church Builder*.

## COMPETITIONS.

*The Drainage of Horsham.*—At a meeting of the Horsham Local Board on the 23rd of June, Mr. Alfred Agate moved, "That the premium of 100*l.* for the best scheme produced should be given for the plan submitted by 'A. B.'" Mr. W. Lintott seconded.—Mr. W. Aldridge moved, "That the premium of 50*l.* be awarded for the plan of 'Tria juncta in uno,'" and Mr. Thomas seconded.—Mr. Cowan said he considered the plans named were as worthy as any two that could be suggested, but he could not help thinking that the scheme of "Gravitation" was equal to either of them, and these three were so nearly equal that he felt it would be more in accordance with justice and the intention of the Board if the second premium of 50*l.* was given to each; and he should move an amendment to that effect.—Mr. Agate had no objection to withdraw his motion if the premiums could be divided in the manner suggested.—Mr. Aldridge also expressed his concurrence. It was then proposed by Mr. Cowan, seconded by Mr. Bostock, and carried, that the 50*l.* premium be given to each of the three schemes, viz., "A. B.," "Tria juncta in uno," and "Gravitation."

*Tyldesley Cemetery.*—Nineteen sets of drawings have been submitted in this competition. Premiums of 50*l.* and 20*l.* were offered by the Local Board for the best and second best designs respectively, and plans showing the site of the proposed cemetery, and "conditions" were issued for the guidance of the competitors. In the conditions it was specially stated that the cost of the work should not exceed 5,000*l.* A critique, avowedly written by an architect, appeared in the *Leigh Chronicle* for Saturday last. The writer states that he has seldom seen a more commonplace series of drawings. Some of the competitors appear to have ignored the limitation as to cost. The *Chronicle* has a leading article urging that professional advice should be obtained before the premiums are awarded.

## REPORT ON THE RESULTS OF THE CONFERENCE ON HEALTH AND SEWAGE OF TOWNS AT THE SOCIETY OF ARTS.

THE Chairman of the Conference and the Executive Committee, after having considered the information furnished from the various localities, as well as the facts brought forward during the Conference, have submitted the following as the conclusions to which such information appears to lead:—

1. In certain localities, where land at a reasonable price can be procured, with favourable natural gradients, with soil of a suitable quality, and in sufficient quantity, a sewage farm, if properly conducted, is apparently the best method of disposing of water-carried sewage. It is essential, however, to bear in mind that a profit should not be looked for by the locality establishing the sewage farm, and only a moderate one by the farmer.

2. With regard to the various processes based upon subsidence, precipitation, or filtration, it is evident that by some of them a sufficiently purified effluent can be produced for discharge, without injurious result, into watercourses and rivers of sufficient magnitude for its considerable dilution; and that for many towns, where land is not readily obtained at a moderate price, those particular processes afford the most suitable means of disposing of water-carried sewage. It appears, further, that the sludge in a manurial point of view is of low and uncertain commercial value; that the cost of its conversion into a valuable manure will preclude the attainment of any adequate return on the outlay and working expenses connected therewith, and that means must therefore be used for getting rid of it without reference to possible profit.

3. In towns where a water-carried system is employed, a rapid flow, thorough ventilation, a proper connexion of the house drains and pipes with the sewers, and their arrangement and maintenance in an efficient condition, are absolutely essential as regards health; hitherto sufficient precautions have rarely been taken for efficiently ensuring all the foregoing conditions.

4. With regard to the various dry systems, where collection at short intervals is properly carried out, the result appears to be satisfactory, but no really profitable application of any one of them appears as yet to have been accomplished.

5. The old midden or privy system, in populous districts, should be discontinued, and prohibited by law.

6. Sufficient information was not brought forward at the Conference to enable the committee to express an opinion in regard to any of the foreign systems.

7. It was conclusively shown that no one system for disposing of sewage could be adopted for universal use; that different localities require different methods, to suit their special peculiarities, and also that, as a rule, no profit can be derived at present from sewage utilisation.

8. For health's sake, without consideration of commercial profit, sewage and excreta must be got rid of at any cost.

The Executive Committee, whilst abstaining from submitting any extensive measures, have no hesitation in recommending that the prevention of dangerous effects from sewage gases should receive the immediate attention of the Legislature, and they submit the following resolutions as the basis of petitions to Parliament:—

"1. That the protection of public health from typhoid and other diseases demands that an amending Act of Parliament be passed as soon as possible, to secure that all house-drains connected with public sewers in the metropolis, and towns having an urban authority, should be placed under the inspection and control of local sanitary authorities, who shall be bound to see to the effective construction and due maintenance of all such house-drains, pipes, and connexions. Provisions having this object in view already exist in the Act constituting the Commissioners of Sewers in the City of London, in the Metropolis Local Management Act, 1855, and in the Public Health Act, 1875, but practically they seem scarcely sufficient for the purpose.

2. That plans of such drains and connexions be deposited in the charge of the respective local authorities, who shall be bound to exhibit them and supply copies of them to the public on payment of a moderate fee.

3. That the owners of houses be compelled by law to send to the respective local authorities, within a specified time after the passing of the Act, plans of all house-drains on an appointed scale."

## PAYMENT OF ARCHITECTS IN MARYLEBONE.

AT the last meeting of the Marylebone Board of Guardians, a debate on the reconstruction of the workhouse was resumed by Mr. Galsworthy stating that the information he had had furnished him with reference to the opinion of Sir G. Scott that 2½ per cent. was a reasonable charge for an architect for a public building was found to be incorrect, and he apologised to the Board, as did also Mr. Endean, of Oxford-street, his informant.

At the desire of the Board, Mr. Galsworthy then read a letter from Sir G. Scott to Mr. Endean, in which he stated that he never took 2½ per cent. in his life, and only once less than 5 per cent., and that many years ago. He questioned whether an architect could be a member of the Institute of British Architects if a less commission was taken. He was opposed in general to competitions amongst architects, but if one was selected, it should be for his professional merit, and not because of friendship and low charges. After alluding to a matter of a personal nature, Mr. Galsworthy said the question, although in one motion, would have to be divided—that was, whether they should have one architect, and whether the rate of commission should remain as at present; and if it was adopted he should have to divide the question on another occasion. He then went into what the Asylums Board were doing, with a view to show that 2½ per cent. commission was sufficient.

The motion, "That it be an instruction to the Workhouse Reconstruction Committee to draw and issue to a limited number of architects a series of instructions inviting plans; that one of such instructions be that the architect's commission be 2½ per cent. on the amount of the contract," was then put and negatived.

**The "Church of the English Martyrs."** Cardinal Manning has opened the new "Church of the English Martyrs," which has been recently built in Great Prescott-street, Minories, adjoining Tower-hill. The new church, which supersedes a small, close, and inconvenient chapel, is a Gothic structure of lofty dimensions, in the Decorated style, but many of the details, especially in the carvings of the arches and capitals of the pillars, have been left rough. The roof is groined in stone. It will accommodate about 1,500 worshippers, and consists of a nave and two side aisles. The architect was the late Mr. E. Welby Pugin. Owing to the fact that other buildings adjoin the church on all sides, it is lighted by a clearstory. The cost of the building is between 10,000*l.* and 12,000*l.* A certain old writer of the name of Foxe would have been greatly edified by the sermon that was preached on the occasion.

## MASTERS AND MEN.

*Bristol.*—At a delegate conference of builders' labourers on June 24th, it was unanimously resolved to cease work on the first Monday in August should the Master Builders' Association refuse to concede the terms demanded.——The painters' strike has terminated, the masters agreeing to a general advance of one halfpenny per hour.——A strike of operative stonemasons commenced on the 19th ult., in consequence of the refusal of the employers to grant a half-penny per hour advance, and to accept a new code of rules which the men seek to impose. The dispute has since been settled, the masters yielding the additional halfpenny, and the men giving in in another direction.

*Chester.* — The carpenters and joiners of Chester are still on strike. The men are being supported by their trade societies, and are receiving from 12s. to 15s. per week as strike pay. They assert that they will remain "out" during the summer unless the masters concede their demands. On the other hand, employers say that trade is dull, and it will do them no harm, and do the men much good, to remain idle for a while. In the meantime there are rumours that the bricklayers intend to make common cause with the joiners.

*Cardiff.*—The strike of painters at Cardiff still continues. They ask 7½d. per hour and their tools found. They are receiving assistance to the extent of 12s. each a week.

*Newcastle.* — The Newcastle master-painters have rejected the operatives' offer of arbitration. The latter ask an advance from 7½d. to 8½d., and 3s. for staying out of town over Sunday. They say their present wages are 5s. less than those of joiners, and 8s. less than masons' or bricklayers'. It is now three years since they received an advance. They have agreed to continue the strike.

*Richmond (Yorkshire).*—The strike amongst the masons employed in the erection of the new barracks at Richmond has terminated, an amicable settlement having been arrived at between employers and men. The depôt centre has to be completed within a certain time, and the contractors having been thrown back by the strike, have been obliged to advertise for 200 more men.

*Greenock.*—During the late strike of masons, several of the masters employed more apprentices than the number allowed by the operatives' bye-laws to each employer, and now since the dispute has been settled two of the firms are being called to account by the men. One of these firms is the Messrs. Coghill & Son, who are building the large poorhouse at Smithston, a contract amounting to nearly 100,000*l.*, and who employ at present about 200 men.

*Portsmouth.*—The whole of the members of the Portsmouth branch of the Operative Bricklayers' Society have struck work, demanding an increase of 1d. per hour in their wages, 6½d. per hour being the present general rate, although some masters are paying 7d. The employers, as a rule, are resisting the demand, holding that the present rate of wage is a fair and equitable one.

*National Federation of Builders' Labourers.*—An important step has been taken by the operative labourers employed in the building trade throughout the country, and numbering, it is said, some 200,000 workmen. They have decided upon a scheme for federating the whole of the existing district and local unions into one large national association. Hitherto there has been a marked absence of unanimity upon trade and other questions among the builders' labourers. With a view to remedying this state of things, the Executive Council of the London Amalgamated Labourers' Union have convened a congress of delegates representing various labourers' societies throughout the United Kingdom, to assemble in the Albion Hall, London, on August 7, when a scheme will be discussed for the regulation and government of the proposed national federation.

*Glasgow.*—A meeting of the operative joiners was held at Glasgow on the 22nd ult., when a motion asking those who were at work to contribute the increase of pay was adopted unanimously, the mover suggesting that the men at work should give 5s. a week in support of the non-society men. One of the speakers held out hopes of success, even though the struggle should be prolonged beyond the Fair time. He said only 650 men were now on strike; and that they had more to fear from "low-class workmen" than from the opposition of the employers. The masters were bound to give in, and he believed, instead of 9d., the men would, ere long, be receiving 10d. per hour. It was simply a question now between the operatives and the employers, how much each could grind out of the other,—a state of matters which was to be attributed to the conduct of the masters. A non-society man ridiculed the idea of men being expected to go about idle, receiving only 6s. a week, when they could easily be earning 38s.; but his remarks were not in consonance with the general feeling of the meeting.——A case of considerable importance in connexion with this strike was heard by Bailies Lamberton and Ure, at the Northern Police-court, on the 21st ult. Two workmen, named George Turnbull and Fergus Jardine, were charged with having intimidated a third operative, named David Wright, while he was at work in Hope-street, on the 17th ult. The accused were fined two guineas each, with the alternative of fourteen days' imprisonment.

## THE WAGNER THEATRE, BAYREUTH (BAVARIA).

THE new theatre erected for the performances of Herr Wagner's new operas is on a gentle eminence to the south of the town, amid most lovely scenery. The building has been constructed of solid stone, and the works have been executed by the architect, Herr Bruckwald, upon the monumental plans laid down by Herr Semper. A correspondent of the *Times* says,—The internal arrangements differ materially from those of other theatres, since they have been adapted to the special requirements of the great composer. Herr C. Brandt, director of the machinery of the Darmstadt Court Theatre, has superintended the disposal of the stage and the machinery; while Herr Hofmann, scene-painter, of Vienna, is preparing the most elaborate decorations.

As to its internal organisation, it may be stated that the space set apart for the audience rises in the form of an amphitheatre, culminating in the Princes' gallery at the back. It will hold 1,344 persons, all told, and the seats are exceedingly comfortable and commodious. There being neither side boxes nor proscenium boxes, the seats are all alike excellent for witnessing the performance. The public will be able to quit the building with rapidity,—in fact, within the space of a few minutes,—since there are no less than twelve places of exit. Moreover, the precautions against the dangers arising from fire are admirable, the stage being surrounded by four high so-called water-towers.

The novelty in the arrangements is the provision made for the orchestra, which we have described and illustrated. Its members will be seated in a deep hollow between the stage and the hall of the spectators, this hollow being divided into three terraces. The musicians will be invisible to the audience, being screened from view by a sound-board, intended to catch and repel the sound, thereby carrying it to the auditorium.

## NEW SKATING RINK NEAR MANCHESTER.

THE populous suburbs of Manchester, Sale and Ashton-on-Mersey, have now an excellent skating-rink, in the construction and arrangement of which are some novel features.

A plot of land, one acre and a quarter in extent, within seven minutes' walk of the railway station, has been laid out as an open and covered rink, and in the whole there are 3,000 yards of surface of Val de Travers asphalte. The open rink has in the centre a spacious lawn, suitable for promenading or for the various games now in vogue, such as croquet and lawn tennis. Along the boundary walls are beds planted with trees, shrubs, ferns, and flowers, the skating surface being between the lawn and the borders. The covered rink consists of a brick-walled and iron-roofed building, of such ample dimensions and so well built, that it would be suitable for almost any public purpose, such as a flower-show, a bazaar, volunteer drilling, or public addresses.

The internal dimensions are,—163 ft. long, 52 ft. wide, 16 ft. high to the eaves, and 36 ft. to the peaks of the skylight. The walls are built of Ruabon bricks, the light colour of which, both inside and out, is agreeable to the eye. The construction of the roof is worthy of notice. The ends are hipped, and an ornamental cast-iron gutter goes all round the building. The principals, 12 ft. apart, are of wrought iron, strongly trussed; on these are wooden purlins, which receive tongued and grooved ¾-in. boarding; over this is laid Croggon's asphalted felt, and on the outside are screwed down galvanised tiles, curved to the sweep of the roof. This construction prevents condensation and down-draughts, and tends to preserve an equable temperature, resisting alike the cold of winter and the heat of summer. The galvanised tiles are each about 8 ft. long and 2 ft. wide, with corrugated rolls 3 in. wide, 12 in. apart.

There are five large doorways for skating in and out, which can be closed by Clark's roller shutters. At the entrance end are the pay offices, and rooms for various purposes, and the upper part forms a convenient gallery for a band of music or for spectators. The general effect of the interior is good, as the purlins and the boards of the roof are stained and varnished, and the iron framework painted a delicate blue. The whole of the works have been carried out in accordance with the designs of Mr. J. H. Lynde. The skating surfaces have been laid down by the Val de Travers Asphalte Company; the brickwork and excavations were executed by Messrs. Luke Winstanley & Son; the whole of the roof and ventilators by Messrs. Edward T. Bellhouse & Co., of Manchester; and the plumbing and glazing by Mr. Collier, of Sale.

## DEMOLITION OF THE LONDON TAVERN.

THE well-known London Tavern, which for many years back has been the scene of an untold number of banquets and festivals, will shortly be a thing of the past. It was finally closed for business purposes three weeks ago, and during the past fortnight the furniture, stock, and the entire appointments have been sold preparatory to the removal of the old structure, which is to be replaced by a new palatial edifice for banking purposes. The building, which covers an area of little more than 6,000 ft., has been sold by the London Tavern Company to the proprietors of the Royal Bank of Scotland for 80,000*l.* In a few weeks it will be taken down, the purchasers intending to enlarge their bank premises, immediately adjoining, by the erection of an additional building, covering the whole of the site at present occupied by the tavern. The new building will be of Portland stone, and the Bishopsgate frontage is intended to be a striking one.

## ROYAL VISITS AND PEST-HOLES.

SPECULATION has been rife as to the cause of the postponement of H.R.H. the Duke of Connaught's visit to Liverpool last week to join his regiment, the 7th Hussars. When the visit of his Royal Highness was announced, the Corporation resolved to place Newsham House at his disposal; but the Duke courteously declined the offer, preferring to occupy the officers' quarters at the barracks in Rupert-lane. It now turns out that these were discovered to be in such a disgraceful state that a communication was forwarded to the Duke requesting him to postpone his visit. Below the house which forms the officers' quarters a huge well was discovered, containing a large quantity of offensive matter. The well, it seems, was sunk when Rupert House was built, some thirty years ago, for the purpose of receiving rain-water, which was stored and pumped up for domestic purposes, for at the time referred to the wants of Liverpool were supplied by the old water companies. The odour from this disused well was sufficient almost to have bred a pestilence in the neighbourhood. As soon as the discovery was made, steps were taken to empty the well. For three hours, on Tuesday, the 20th ult., the steam fire-engine Hamilton was engaged in pumping up the foulest of stagnant water, ere the more solid refuse could be got at, and the following morning the nightsoil carts removed the offensive matter taken out of the cesspool. The *Liverpool Journal* very pertinently comments upon the matter by saying that "it is all very well to be specially solicitous for the health of Royalty. . . . . But can anything exceed the fatuity of officers and others who have allowed this atrocity to exist for many years under the rooms they occupy without making an effort to get it abolished? Why should the arrival of a Prince be required to arouse gentlemen of education to a sense of the necessity of the commonest safeguards of health? . . . . . We read of Indian villages being half depopulated with cholera, and take notice with a feeling of superiority that such calamities are natural enough where all sanitary principles are defied. And

then we discover that beneath well-appointed officers' quarters in one of the greatest towns in England has accumulated for sixteen years, in a deep well, filth of the most horrible and intolerable kind. Will it never be understood how terrible is the responsibility incurred by all who anywhere tolerate conditions of living which are inimical to health? It is a satire on common sense that a Royal visit should be needed to make us empty our pest-holes."

## GUILDHALL AND BOW CHURCH.

THE last afternoon visit of the Architectural Association for the present session took place on Saturday last, when a visit was paid to Guildhall, by the courtesy of Mr. Hadland, the hall-keeper. After examining the crypt—the greater part of the eastern portion of which is in a tolerably perfect condition, though of the western portion nothing is left except the springings of the ribs on either side—and other portions of the building, under the guidance of Mr. G. H. Birch, who read a short paper on the subject, and was accompanied by Mr. W. H. Overall, F.S.A., the librarian, the visitors made their way to the Church of St. Mary-le-Bow, Cheapside, where they examined the remains of the well-known Norman crypt. The church ranks first among the parochial churches of the city, and has played no inconsiderable part in history. It is one of the "peculiars" of the Archbishop of Canterbury, the Bishop of London having no jurisdiction within its walls. Its name was derived from the crypt—St. Mary of the Arches. In the crypt the ecclesiastical tribunal known as the Arches Court formerly met. The church was always looked upon by the citizens as *their* church, in contradistinction to St. Paul's, which was more in the hands of the clergy. From its tower the curfew was tolled, and later on, the London apprentices used to wait for its bells to ring as a signal to shut up shop. The present church, with its well-known detached campanile, was built by Wren after the Fire of London.

## THE HOLBORN SCHEME: ARTISANS' DWELLINGS.

MR. SECRETARY CROSS has declined to confirm the scheme, or any portion of it. His secretary, in writing to the Metropolitan Board of Works, says,—

"The partial scheme appears to Mr. Cross to be inadequate and also objectionable, from want of proper space, the street not being sufficiently widened in proportion to the height of the adjacent buildings. On the other hand, the entire scheme, as deposited, does not, as shown in Mr. Nichols's report, provide accommodation for as many persons of the working class as would be displaced. The failure to comply with the statutory requirement would alone put it out of the power of the Secretary of State to confirm the scheme, even were it in other respects not open to objection. This, however, is not the case. Mr. Cross is of opinion that the area proposed to be dealt with is too irregular in its configuration, and too much broken up by other buildings (which are not taken) to admit of being converted into a convenient and appropriate site for working men's dwellings on the scale which is required to meet the necessities of the case. He much regrets that he had not before him the larger scheme of improvement, which was originally submitted to the Board by Sir J. Bazalgette and Mr. Vulliamy."

The delay which will thus be caused is much to be regretted. We had hoped that by an interview, and improvements on the part of the Board, the Home Secretary might have found himself able to authorise the commencement of the works.

## SUGGESTED NON-LIABILITY FOR RENT ON ACCOUNT OF DEFECTIVE DRAINAGE

BLACKBURN-MAIZE *v.* TOWNEND.

THIS was an action (tried in the Common Pleas Division of the High Court of Justice, before Mr. Justice Denman and a special jury) to recover 30*l.*, the amount of one quarter's rent of a house which the defendant had rented of the plaintiff. The defendant denied his liability upon the ground that the house had not been kept in a fit state to be inhabited, and he also set up a counter claim for damages upon the ground that his wife met her death in consequence of the improper drainage.

It appeared that the plaintiff was a gentleman living at Bound's Park, Tonbridge Wells, and in 1858 he took from Alderman Sir Thomas Gabriel an interest in one of three houses in Penington-road, Southborough. He lived there with his family from that time until 1872, and afterwards let the place to the defendant. This gentleman lived there until June last, when his wife died; and he, having had the drainage examined and reported upon, refused to remain longer in the house, but left, and declined to pay any rent except down to the day when the occupation ceased.

The case for the plaintiff was, that he and his seven children had excellent health while they lived in the house, and that the same could be said in reference to the other two houses, which were occupied by the Baroness de Larpent and Colonel Hebbert. The level of the land was such that the houses could not drain into the public sewer, and they had to be drained into cesspools. There were three cesspools, one for each house, and these overflowed into a fourth cesspool. Previous to the defendant taking the house, Mrs. Townend went over the place with the plaintiff, and he fully explained the system of drainage to her, and the periods when the cesspools should be cleaned out. The defendant went into the house in November, 1873, and in October, 1874, he wrote to the plaintiff: "My wife and family enjoy good health at Southborough, so I am willing to take the premises for three years further provided you do the following repairs." A few days before the death of the defendant's wife he wrote to the plaintiff complaining of a smell from the housemaid's sink, and added that this was the cause of the illness. It was a case like that of the Prince of Wales. There had been a previous complaint, and the plaintiff sent workmen to do what was necessary; but they were not allowed to proceed with their work because their noise disturbed the patient.

Evidence was given for the plaintiff to the effect that the drainage of the house, though not perhaps the best, was good. [The case was settled by arrangement between the counsel, a juror being withdrawn.]

## COMPENSATION CASE.

KELLOCK *v.* THE CHESHIRE LINES COMMITTEE.

THIS case was recently heard at the Sheriffs' Jury Court, St. George's Hall, Liverpool, before Mr. Aston, Q.C., assessor, and a special jury. The Cheshire Lines Committee require, for the purposes of their new branch goods line to the north end of Liverpool, to pass through the estate of Mr. C. W. Kellock, shipbroker, of Liverpool, and the jury required to assess the amount he should be paid for the land actually taken, and as compensation for injury to the rest of the estate.

It appeared that Mr. Kellock purchased the estate with the residence thereon some ten or twelve years ago. It is situated at Woolton, abutting on Grange-road, and adjoins the lands of the Marquis of Salisbury, Major Walker, and others. Mr. Kellock resided upon the property, which is some 36 or 37 acres in extent, and has spent considerable sums upon it, having established a miniature model farm. The new line intersects it in such a way as to sever a portion of it,—about nine acres,—from the main part by an embankment ranging from 18 ft. to 21 ft. in height. The valuers on both sides agreed that the estate might be considered building land; but the two sides differed even in a greater degree than usual in their estimates of the total compensation. The first witness called for the claimant valued the 18,312 yards of land actually required by the railway at 2*s.* a yard, or 2,754*l.* 6*s.*; or, with the 10 per cent. for compulsory sale, 3,029*l.* 14*s.* 6*d.* The damage by severance to the main portion he computed at 6*d.* per yard on 88,323, or 2,213*l.* 1*s.* 4*d.*, and to the eastward or smaller section, 1*s.* 6*d.* per yard, to 3,345*l.* 15*s.* He also allowed 1,000*l.* for the erection of a residence, making his total estimate 9,596*l.* 9*s.* 6*d.* Several other valuers called for the claimant brought up their estimates to similar amounts. The valuers for the railway company, on the other hand, placed the actual value of the land at a much lower figure, and their estimates for injury to the land were correspondingly low, and they allowed nothing for injury to the residence. Their total valuations averaged only a little over 2,000*l.* The jury found, as the value of the land taken, 2,524*l.* 15*s.*; as severance damage, 2,597*l.* 6*s.* 9*d.*; and as injury to residence, 1,000*l.*; making a total of 6,122*l.* 1*s.* 9*d.*

## THE BURSTING OF THE TANK AT ST. GEORGE'S HOSPITAL.

AN inquest has been held by Mr. Bedford, the coroner for Westminster, touching the circumstances attending the death of Eliza Gomez, aged twenty-four, an in-patient lying in the Wright ward, which is situate on the east side of the building, and above which, on the extreme top, was erected an iron tank, capable of holding a sufficient quantity of water to supply the whole of the hospital. On Saturday, June 3rd (as already recorded by us), one side of the tank gave way, crashing through the flooring of the above ward, as well as the ward below, destroying the furniture, and severely injuring several of the patients, amongst whom was the deceased, who, after lingering in great agony, expired from the effects of the injuries.

Charles Todd, secretary to the hospital, said,—The tank was constructed in 1869 by Messrs. Eastons & Anderson, according to a tender sent by them, which was accepted by the authorities of the hospital. The tank has been in operation ever since that year, and cleaned quarterly by the plumbers of the hospital. It was last cleaned in the month of April of this year. There was no intimation then that there was anything wrong with the tank.

Mr. Henry Hunt, Victoria-street, surveyor, deposed that, having been instructed by the governors of the hospital to make an examination of the broken cistern, he had done so, and found that the tank was of cast iron, 10 ft. by 10 ft., by 12 ft. in height, fastened with 5-8th wrought iron bolts. The immediate cause of the accident was the breaking of one plate of each pair of cheek plates, which, being weakened by corrosion, were unequal to the double strain put upon it. The cast-iron plates, two tiers in height, being thus left without restraint, bulged out, cracked, and fell. This corrosion was in the wrought-iron rods and cheek plates, and in consequence of such corrosion the plates and rods became weakened, and the tank therefore burst. Persons getting upon the rods or placing a ladder upon the cheek plates might possibly weaken them. The cross bolt in the plates was not long enough, and the accident possibly occurred through that.

By the Coroner.—It was quite possible that the fracture in the tank might have resulted from frost, but it was very unlikely.

Mr. Stephen Salter, Woburn-place, Russell-square, said,—I am the architect of this hospital, and on Saturday, the 3rd, I was informed of this lamentable occurrence. I examined the premises to see if anything had given way in the walls, and found, to my great relief, that the walls had not the slightest crack in them, and I came to the conclusion that the fabric of the hospital was perfectly sound and safe. The cast-iron girders traversing the various floors were quite intact, and the cast-iron shoes also sound, the damage being confined to the rafters and woodwork and plastering of the floors and ceilings, together with that portion of the roof smashed by the falling water and cast iron. I took no part in the construction of the tank, and therefore would rather not say anything about the cause of the accident. As architect I superintended the construction of the brickwork upon which the tank was to rest, but the engineering work, of course, I left to Messrs. Eastons & Anderson themselves.

The jury returned a verdict that the death of the deceased resulted from the slipping of the tie-rods in the tanks, and that such slipping was due to an accidental cause. The jurors furthermore expressed a hope that in future the governors of the hospital would take measures for having the tank examined by a competent engineer, instead of a mere workman like the carpenter of the hospital, every time it was cleansed.

## PAISLEY.

THE new Burgh Lunatic Asylum has been inspected. The new building is situated at Riccartsbar, about a mile to the south of the town, on an elevated plateau, commanding a magnificent view. The main building is of a T shape. There is a spacious entrance-hall in the centre, behind which is the dining-hall, kitchen, &c., and on each side the accommodation for the male and female inmates. Behind the main building is placed the engine-house, washing-house, laundry, &c. The frontage is 270 ft., and the pavilions at each side extend backwards 120 ft. The heating and ventilation are effected by air,—cold in summer and hot in winter,—being forced by a steam fanner into every apartment. This part of the work was executed by Messrs. Weems, of Johnstone. The asylum will accommodate 120 patients, and the total cost is about 12,500*l.*, exclusive of the price of ground. The whole has been carried out from the designs of Mr. John Honeyman, architect, Glasgow. The builders were Messrs. Lyall & Leckie, and the clerk of works was Mr. C. Henderson.

## ST. MARGARET'S CHURCH, TOPSHAM, DEVON.

THE parish Church of Topsham, on the Exe, near Exeter, has been partly rebuilt, and the eastern portion was reopened on the 17th ult. The former church had long been found inconvenient and unsuitable. On the site of the ancient church, of which the tower only remains, a large room (literally), nearly 70 ft. square, was erected about 1790, in a very unbecoming style, with wood windows, and a plaster ceiling, groined into imposts on a few wooden Doric columns. The greater part of this building is now removed, and a good portion of a church, in the Decorated style, is erected in its place, being the chancel, its aisles and transepts, at a cost of 3,700*l.* The nave portion, wanting to complete the edifice, is now commenced. The material is Torbay limestone, with Bath stone dressings. The whole outlay (retaining the old tower) will be about 5,550*l.* The site is rather a favourable one, on a steep bank of the river, and well seen from the South Devon Railway.

The architect is Mr. Edward Ashworth; The contractors are Messrs. Stephens & Son, of Exeter; and the clerk of works is Mr. R. Bradford.

The east window of the chancel (five-light) has the four Evangelists and the Good Shepherd, central, by Drake. There is also stained glass in the north transept window,—eight subjects in our Lord's life,—the gift of Capt. Greatwood, the work of Beer & Driffield; another stained-glass window in the chancel is the gift of the Rev. H. T. Ellacombe, by Hughes.

**Memorial.**—A bronze statue of the late James Carmichael, engineer, from the chisel of Mr. John Hutchison, R.S.A., has been unveiled in Dundee. The ceremony was held on the centenary of the birth of Mr. Carmichael. Mr. Carmichael was the inventor of the fan-blast, and of many improvements in mechanics. The statue and pedestal rise to the height of 17 ft. Mr. Carmichael is represented in sitting posture examining a plan, with miniatures of his inventions on the plinth.

## FINE IRONWORK.

AT the Philadelphia Exhibition, an ornamental pavilion in cast and wrought iron, designed by Mr. Thomas Jeckyll, of London, and manufactured by Barnard, Bishop, & Barnards, of Norwich, is exciting some attention, and justly.

This pavilion, which is intended for use upon a lawn, or ornamental grounds, is 35 ft. long by 18 ft. wide, and 35 ft. high to the extreme ridge. It is mounted upon a dais of four steps. It has two floors, the upper of which is reached by a spiral staircase. It is supported by twenty-eight square columns placed 2 ft. 6 in. apart. The ornament in the shafts of these columns is of a very rich and varied character. At a height of 7 ft. 6 in. from the ground, a transom bar connects the columns. The lower verandah is supported by cast-iron brackets, firmly secured to the columns. The outlines of these brackets are in all cases alike, but the enrichment of their spandrels is varied by bas-reliefs, the subjects of which are studies from the "Apple Blossom, with flying Birds," "Whitethorn, with Pheasants," "Scotch Fir, with Jays," "Sunflower," "Chrysanthemum, Narcissus, Daisy and Grass, with a Crane and rising Lark," &c. These brackets further support the gutter and cresting of the lower roof.

The upper floor is surrounded by a wrought-iron balcony railing, 4 ft. high, of a light and severe design. The upper roof is supported in its turn by twenty columns of a similar design to the lower ones. These are connected by a transom bar, above which is a rich open-work fish-scale panel supporting the upper gutter, with cresting and fans of a like character to the lower ones. The brackets, however, upon these columns are of a different outline to the lower ones, and the spandrels are filled with many designs of a bolder character. Between each bracket, both upper and lower, is an ornamented ceiling of a combined floral and geometrical pattern, the chrysanthemum being taken as the type for its ornament. The roof (the rafters of which are of wrought T-iron) is covered with zinc, in curved tiles, and is surmounted by an elaborately-carved cresting.

One of the most important and novel features of this work is the railing which surrounds the entire building. This is 4 ft. 6 in. high, and is entirely of wrought iron. The sunflower has been taken as the type for its ornament. The railing is divided into seventy-two panels, each of which is occupied by a sunflower 3 ft. 6 in. high, the flower itself being 11 in. in diameter, having carefully-veined leaves, six in number to each flower.

## THE CHIMNEY-SWEEPERS ACT.

AT the Huddersfield Borough Police Court, Messrs. Stead & Co, master builders, Cowcliffe, were summoned for unlawfully constructing a chimney by not having rounded off the angle of flue 4½ in., as required by law. Mr. R. P. Berry appeared for defendants.

Mr. Learoyd appeared on behalf of the prosecution, and informed the magistrates that the charge was brought by an inspector of chimneys (Mr. Hill), who was employed by some philanthropists, who, throughout the various towns in the country, had taken up the question, considering by so doing that they were serving humanity. In the first place, they took up the question in reference to the employment of boys in sweeping chimneys, and in the next place they took up the question on the legal ground that the flues ought to be of such a dimension as that chimneys could be swept by brushes so far as domestic dwellings were concerned. The Act of Parliament, in order to do this, provided that there must not be an angle, but a curve, and therefore it was an offence if any one built a chimney with an angle instead of a curve.

Mr. Rowbottom, assistant to Messrs. John Kirk & Sons, architects, Lion Arcade, was then called, and said he inspected four houses, which were being built by the defendants, at Marsh, on the 27th of October last, and found the angles in each acute instead of round, while the "with" between the flues was only about 1½ in.

For the defence, Samuel Crowther, mason, said he did the mason's work at the chimneys. The chimneys were rounded off, and he was sure it was quite possible to sweep the chimneys with a machine from the bottom. The angle was not chipped off, but rounded with mortar, so that a brush could pass.

The Bench, after a brief consultation, stated that they had given the case very serious consideration, and they felt bound to convict, but at the same time they had decided to convict in the lowest penalty, 10*l.* in each case and costs, in all 21*l.* 2*s.* Other builders were also fined.

## THE NEW MINERS' HALL, DURHAM.

THE new Miners' Hall, at Durham, was inaugurated on the 10th inst. by a special meeting of the Council of the Durham Miners' Association. It contains offices for all the leading officials, together with a large public office, committee-room, retiring-rooms, and lavatories upon the ground floor. Upon the upper floor are the large hall, ticket-office, cloak-rooms, smoking-rooms, and other conveniences. The hall is 55 ft. long by 32 ft. broad, and is 22 ft. high. At one end is the raised platform for the speakers, and at the opposite end is a gallery. The hall is lighted by sunlights, and the seating is cushioned throughout.

The building is in the Italian style, and has at the north-western angle a lofty unequal-sided octagonal clock tower, with domical roof covered with lead, and surmounted by lofty gilded finials.

The foundations of the building, when opened, proved to be of the most treacherous nature, the soil being for the greater part nothing but a wet spongy bog, whilst in one portion a quicksand, from which the water rose in large quantities when tapped, had to be dealt with. It is satisfactory to hear, however, that the building has been successfully completed, and that although some portions are heavily weighted,—as, for instance, the tower portion,—nothing in the shape of settlement has taken place. The estimated total cost will be about 9,000*l.* Mr. Thomas Oliver, of Newcastle-on-Tyne, was the architect.

## THE GLASS-LINED IRON PIPE.

THIS is an American invention of recent date, and seems an important one in a sanitary point of view. It consists of a wrought-iron pipe, into which a tube of flint glass, one size smaller, is inserted. The space between the glass and the iron is filled with a plastic substance, composed of plaster of Paris and other ingredients, forming an excellent non-conductor. This filling is uniform and perfect, all the air being pressed out of the intermediate space by the process of lining. This connecting substance firmly unites the two materials, and at the same time overcomes the difference of expansion and contraction between the glass and iron. The lining is protected at the ends of the sections of pipe by cement or paraffine, a thin layer of those materials being placed in the space where two ends of the pipes or fittings are screwed together, so as to make perfectly water and air-tight joints. Bends, branches, and connexions, are made by means of glass-lined elbows and tees, and the pipe is put up or laid in the same manner as gas and steam pipes. The pipe is manufactured in lengths of 8 ft. for continuous lines, and such shorter pieces as may be required for special locations. After a line of pipe is completed it should form a perfect inner surface of glass.

## THE ADAPTABILITY OF TERRA COTTA.

SIR,—In his paper on this subject, published in a recent issue, Mr. Edmund Sharpe, writing with the authority of experience, assumes that the value of terra cotta as a building material is commensurate with its "solidity." I think that an examination of the best examples of ancient terra cotta would prove the fallacy of the assumption; and, that we possess these examples, proves that their makers knew pretty well what they were about. That its durability is due to the paramount condition of being thoroughly "fired" is undoubtedly true, but this amenability to heat is in its turn dependent upon the antecedent condition of being thoroughly "dry."

The difficulty of drying a solid block is at once apparent. The drying proceeds *from* the surface inwards, thus gradually imprisoning within the block a sufficiency of moisture (and, probably, other latent force) to occasion its disruption under the subsequent heat of the kiln. Thorough "drying" is the prime necessity in obtaining first-rate work, and which being properly carried out, there is little danger of warping under firing.

Some noteworthy examples of the successful manufacture of terra-cotta in considerable bulk may be found in most of the school buildings recently erected by the London School Board. The steps used in these are of hollow terra-cotta, 4 ft. 6 in. long, with a rise of 6 in. and a tread of 10 in., and 1¼ in. in thickness of material after leaving the kiln, in which they require to remain a fortnight.

These steps, therefore, are not "solid"; but, to use Mr. Sharpe's words, are solidly built into the walls just as if they were of stone. They essentially form part and parcel of the body and strength of the structure in which they are placed, and I think it must be conceded that, on the point of strength and durability, terra-cotta can hardly be submitted to a more trying test than to fall beneath the daily-reiterated tread of our energetic school children. C. W.

## WORKMEN'S TRAINS.

"To live in London or not to live in London" is now the question for the wage-earners. Leave off work at five, a walk home of five minutes, and after that the theatre, music-hall, or tap-room; or a short railway ride toward your own country house and the evening spent in your garden, plant-house, or shop, besides having room to move and good air for the growing family,—that is the question discussed in the *Builder* of the 17th ult. With workmen's trains the latter method is possible, but ought not the Legislature to compel railway companies to issue tickets (weekly if desirable) as late as eight o'clock in the morning, so that warehousemen should get to their business before half-past? Some time back I spoke to a brewer who had to walk between Fulham and Caledonian-road, and a few days back with a pipe-maker who had to be at business at least an hour before time and walk near 1½ mile because no workmen's trains ran between King's-cross and Kensington. If the railway companies obtain exclusive rights, ought they not to use those rights for the public benefit at the most suitable times, and allow the use of passes between District and Metropolitan lines for workmen as well as other persons? JOSEPH CHRETIEN.

## "GALVANISED IRON CISTERNS AND PIPES."

SIR,—"Galvanized iron cisterns" are steadily supplanting all other domestic appliances for the storing of water. Builders, a class singularly free from prejudice and the trammels of tradition, long ago recognised the superiority of "galvanised iron cisterns" over those constructed of lead or slate. They saw that they were cheaper, lighter, less likely to get out of order, and that the water drawn from them was cool, pure, and free from all metallic taint and chemical association. If a slate cistern gets leaky, it has to be caulked with gasket and red lead, and unless the cistern is constantly kept full, the red lead perishes, leaving behind a poisonous powder, which the water absorbs as soon as the cistern is refilled. Your correspondent, "R. B.," in his letter complains that his "galvanised iron cisterns" rust. Now, this is just what good "galvanised iron cisterns" do not do; therefore, in the absence of fuller information, we are drawn to the conclusion that your correspondent's cistern is of inferior manufacture, and badly galvanised. I have had one constantly in use for the last six years, and the "rust" he alludes to is "conspicuous by its absence." W. C. B.

*** Much longer experience than this is needed. Many of the galvanised iron cisterns sold are utterly worthless, and fall into holes in a few years. The question is how long, under various circumstances, will the best last?

## PRESBYTERIAN CHURCHES AT LIVERPOOL.

*Kirkdale.*—The foundation-stone of a new Presbyterian Church, situated at the corner of Stanley-road and Fountains-road, Kirkdale, and which is to be called the Union Presbyterian Church, was laid on the 15th ult. by Mr. Samuel Stitt, J.P. The edifice will be in the Venetian Gothic style of architecture, and is to accommodate 900 persons. Beneath the church there will be spacious schoolrooms, intended to provide for about 600 children. The building will be bounded on the south by Fountains-road, and on the east and west by two streets yet to be constructed. The main entrance to the church will be from Fountains-road. There will be vestries and minister's room, with separate entrances, attached to the church. The estimated cost is about 7,000*l.* Messrs. Thomas Wainwright & Sons, Leigh-street, are the architects. The contract for the building has not yet been let; but Messrs. Wells & Sons provided the foundation-stone and necessary fittings.

*Waterloo.*—On the same day the memorial-stone of a new church at Waterloo was laid by the Moderator of the Presbyterian Church, the Rev. Dr. Anderson. The church, which is being built at the junction of Crosby-road and Great George's-road, is a substantial brick structure in the Early French Gothic style, with stone and black brick dressings. The dimensions are 85 ft. 6 in. in length by 32 ft. 6 in. in width, and it is intended, when completed, to accommodate 500 persons. The design includes a tower and spire rising some 60 ft. from the ground. Hitherto the congregation have worshipped in the Assembly-rooms in East-street. The new building, including the land, will cost about 5,000*l.* The building operations were commenced about eight months ago, and the church, it is expected, will be opened in the course of another three or four months. The builders are Messrs. Costain & Kneen, of Great Crosby. Mr. Barker, the architect, made a statement as to the details of the building. He said that in the nave of the church there would be sittings for 323 persons, but there would be an end gallery, in which the organ would be placed, and in that gallery there would be sittings for 40 people, making a total accommodation for the present for 363. As soon as the funds permitted they proposed to couple two transepts, which would give extra accommodation for 168, thus making a total accommodation for 531. The present contract was for 3,200*l.*

## PRESBYTERIAN CHURCH, BLYTH.

THE new English Presbyterian Church at Waterloo, Blyth, was opened on the 6th ult. The building forms a commanding architectural feature. The lofty nave, and the tower and spire, are visible for miles around, and from far out at sea. The principal front, with the partly-detached tower and spire rising straight from the ground, the large buttresses to the nave, with sunk and traceried panelling and carving, the deeply-recessed doorways, and the exceedingly lofty traceried windows, are its characteristics. The chancel arch is executed in stone, and supported by marble columns. Within the chancel is placed the platform, of somewhat larger and more ornate character than usual. Accommodation is provided for between 700 and 800 persons. The estimated cost is from 4,000*l.* to 5,000*l.* Provision has been made for the erection of a large school room. Mr. Wm. Winship has acted as clerk of the works; and the contractors were Messrs. White & Sproat for the excavation, mason and bricklayers, and carpenter and joiner's work, also the slater's and plasterer's works; Mr. T. Walker for the painter and glazier's works; and Messrs. Walker & Elmley for the ironfounder's, plumber's, and engineering works. Mr. Thomas Oliver is the architect for the building.

## CHURCH-BUILDING NEWS.

*Putley* (*Herefordshire*).—Putley Church, near Ashperton, on the Hereford and Worcester line, has been reopened, after restoration under the direction of Mr. Thomas Blashill, architect, London. The church formerly consisted of a nave, with a wooden south porch, and a square wooden belfry, which was probably erected about 1799, a chancel, and a small modern vestry. Every portion was in a state of extreme dilapidation, though the building had been renewed from time to time, and but little of the ancient architecture remained when the work of restoration was lately commenced. The work of restoration was commenced last June. The north wall of the nave and the greater part of the chancel and vestry have been rebuilt, and a new timber belfry has been provided. The fittings throughout the church are new, and there are a new heating apparatus, new deep drainage, and new roof coverings. In the restoration of the church some interesting relics were found. In the *debris* of the north wall of the nave a considerable quantity of fragments of Roman bricks, roofing tiles, coarse pottery, and mortar was found, which would lead to the belief that a Roman building of some description once existed on or near the spot. These "foot-prints on the sands of time" have been carefully preserved. The old east window was a single-light, 3 ft. 1 in. wide, and was evidently composed of the fragments of an older window which it in turn replaced. Some exception was taken to the proposal made by the architect to replace it by a new three-light window. He found a precedent for his proposition in the fact that the jambs of an old three-light window were still *in situ*. A new roof of trussed rafters has been put to the chancel, and the old fifteenth century roof of the nave has been cleaned and repaired. All the roofs are covered with Broseley tiles. The modern belfry still retained fragments of the ancient pyramidal-roofed structure, of which an illustration was given in the *Gentleman's Magazine* for 1795, from a sketch by James Walthen. The new belfry is made of similar design. The whole work has cost over 1,300*l.* The works have been carried out by Messrs. Collins & Cullis, of Tewkesbury.

*Newabbey.*—The foundation-stone of a new parish church at Newabbey has been laid by Mr. Oswald, of Auchencruive and Cavens. The new church, of which Mr. Barbour (of the firm of Halliday & Barbour, Dumfries) is the architect, is a Latin cross on plan, the main part of which will measure internally 73 ft. by 25½ ft., and be placed due east and west; and the transept arms of the north and south will each measure 17 ft. 9 in. in width, and project 11 ft. 3 in. In the northern angle of the building will be placed the vestry, measuring 9 ft. 3 in. by 7 ft.; and in the centre of the south side wall will be the porch—an open one—measuring 12 ft. by 8 ft. The number of sittings to be provided for is 400. The roof will be open, the principals being framed with carved struts springing from stone corbels in the walls, and over the principals will be purlins, rafters, and sarking—all cleaned. The principals and purlins will be of pitch pine, and the rafters and sarking of white pine. The walls will be built of granite rubble and red freestone dressing. The style adopted is thirteenth-century Gothic.

*Letheringsett.*—Letheringsett Church has been re-opened, after restoration (with the exception of the circular western tower). The church, which is of the early Norman period, is supposed to have been built, or else restored and enlarged, by Grimbauld Bacon, a Saxon, who settled in Letheringsett, or Leringsett as it was then called, soon after the Conquest. The long and short work at the east corner of the north aisle and the round tower, together with its non-parapeted and pyramidal roofing, are thought to be the remains of Grimbauld's church fabric, and probably much of the side walls are of the same date. The chief work of restoration in the present instance, in addition to the usual repair of defects and removal of worthless fittings, has been the return to the original level of the floor in the nave and aisles; the bases of the clustered columns having been found buried 12 in. under a modern brick pavement. The internal proportions of the building obtained by the removal of this pavement have thus been set right and the ascent to the chancel increased by two steps. The arcade used to finish eastwards with what appeared to be half columns, but these proved to be entire clustered columns like the others, but half enclosed by masonry. This masonry has been removed so as to disclose the columns, and to enable archæologists to determine what may have been the original or intended form of the church. The east window has been filled with stained glass (by Preedy), representing the Ascension. The internal sill level of the old window has been retained, and used as a shelf, upon which a stone reredos has been placed, with a black marble super-altar, the gift of the architect. All the fittings throughout the church are new, and as there were no old ones to dictate a restoration, they have been designed as nineteenth-century work. The whole work has been carried out by Mr. Chapman, of Hanworth, from designs and under the superintendence of Mr. E. J. Tarver, architect, London.

**Hastings Town Hall.**—The Town Council are certainly unfortunate. What was stated by those who took this question in hand in November last, and whose opinion was cast on one side as worthless, and which was again pressed by Mr. Alderman Williams in Council as to the right of the Town Council to erect the proposed building upon the Central Cricket Ground, in Meadow-road, has after seven months been discovered to be true, as it is stated the Council are now advised that the property in question is trust property. The land is to be used for recreation purposes and cannot be used for public building, unless every subscriber consent to the arrangement; but Mr. Williams was told the law propounded by him was bad, and if the consent of the Cornwallis Trustees were obtained any building could be erected, and this has proved to be an error.

## DISSENTING CHURCH-BUILDING NEWS.

*Newcastle-on-Tyne.*—On June 5th, the corner stones of a new United Methodist Free Chapel at Bulman Village were laid, the present chapel at Bulman Village having been found to be too small. The new chapel, which will provide sittings for 730 adults, is to be built from plans by Messrs. Septimus Oswald & Son, architects, Newcastle, at the junction of the West-avenue (a newly-formed street on the Gosforth Park Estate) and the North turnpike road. The architecture of the chapel is English Gothic of an early type, with a trace of French feeling in some of the details. The walling throughout is to be of "snecked rubble," with chiselled ashlar dressings. The extreme internal dimensions are 82 ft. by 43 ft., and 38 ft. high. The estimated cost of the building is upwards of 4,000*l.*, and with the price of the site the total cost will be about 5,000*l.* The contractors for the whole of the structural works are Messrs. Henry Hudspith & Son, their sub-contractors being:—Messrs. Wylie for joiner and carpenter's work; Messrs. G. & T. J. Waite for plumbing work; Messrs. J. Montgomery & Son are the contractors for plaster work, and Mr. C. S. Wardroper (Bulman Village) for painting and glazing.

*Reading.*—A new Congregational church is about to be erected in this town as a mission church to accommodate a body who have for some time past held services in a schoolroom. Messrs. Wm. & J. T. Brown & F. W. Albury are the architects.

## SUUM CUIQUE.

ON the stairs of the Delavan Hotel, at Albany, New York, there is a marble slab, upon which there is the following inscription:—

"Delavan House, erected 1845.
J. W. Adams and J. P. Kirkwood, Architects.
William L. Woollett, Jun., Superintendent.
Enlargement completed, 1849.
Enlarged and improved, 1856.
W. L. Woollett & E. Ogden, Architects.
W. Delumano, Decorative Artist.
James W. Eaton, mason; John N. Parker, carpenter; William Gray, stone-cutter; Ridgway, Russ, & Nesbitt, plumbers; Iva Porter, painter and glazier; W. Munsig, gas-fitter and steam work; Dixon & Munson, marble work; Pruyn & Lansing, iron work; Hoch Strasser & Blachall, bell-hangers; Steele & King, paper-hangers; Henderson, Kennedy, & Kneeland, grates; Richardson & Barrett, tinmen; Van Hewson & Charles, gas-fixtures, Auburn Gas Works; H. Gilbert, foreman carpenter; P. Mansfield, foreman mason."

To make the list complete, the name of the man who mixed the mortar ought not to have been omitted. Is the tablet a proof that those who were employed "took it out" in advertisement?

H.

## Books Received.

*Architectural Ironwork: a Practical Work for Iron-workers, Architects, and Engineers, &c.* By WILLIAM J. FRYER, Jun. Illustrated. Willey & Sons, New York; Trübner & Co., London.

THIS book, the lengthy title-page of which designates it as written generally for "all whose trade, profession, or business connects them with architectural ironwork," and as including "valuable suggestions for the successful conduct of business," is apparently a practical ironfounder's experience put into systematic form, as a general book of hints and reference for those engaged in ironfounding, and the application of ironwork in building. "Years of study, observation, and hard practical toil were the price of the author's thorough knowledge of this class of work," he tells us, and the book conveys the idea that this is the case, and that the writer has drawn his conclusions from practical observation, combined with a good deal of thought and shrewdness.

In regard to the bulk of the book, the practical directions for carrying out iron construction, we observe nothing new; but the book may be said to be generally very full and very systematically compiled. There are sufficient diagrams to render clear every point in construction that is described, and the pages bristle with tables of figures for simplifying calculations and ascertaining the proper proportions between load and sectional area, and other such prac-

tical problems. Some other suggestions which are special to the book are in relation to the conduct of the ironfounding business, and are worth attention. The author strongly urges keeping an accurate account of the cost of material and labour on each separate job turned out, and on all the different portions of the work, as the only way of arriving at a certain knowledge of how the business is prospering, and of getting a basis for safe and reliable calculations of cost in future work. The reason that many ironworkers, after doing a large business, find themselves at the end of the year little better off, is that they have neglected a thousand and one small items in making their estimates, and, in fact, have practised a system of self-deception. It is true, observes the author, that the man who has fixed a line of prices upon accurate calculations will often find work apparently leaving him because he cannot compete with the lower prices of less careful estimators. But "such a man need have no regrets. Let him confine himself to such articles as do pay, or raise the standard of his work so as to command a superior price in the market." More money, he observes, is made or lost in the foundry than in any other department. This part of the work should be superintended by a foreman possessing practical ability in the turning out of good castings, rather than one full of scientific theories. The foundry business, also, is "peculiar" in one respect. "The manager has continually to overcome a tendency to name lower rates per pound in taking orders than the facts of the real cost of production warrant. The business is carried on for the purpose of making money, and that aim needs to be constantly enforced by thorough and systematic management of and reference to tables of costs." This is good, sound, wholesome advice; but we should hardly say the tendency referred to was "peculiar" to the ironfounder's business.

The only fault we find with the book is in reference to the first word of the title (which had better have been "*Practical* Ironwork," than "*Architectural* Ironwork"), and some of the reflections which have reference to that view of the subject. The author has aimed at doing something to improve the nature of architectural design in iron, in regard to which he observes that "there is a growing discrimination between the true and the false in this branch of productive industry. A higher order of taste is being developed, and the tendency is towards more finished and more ornamental work": a state of things which, though "encouraging," involves an increased expenditure in pattern-work. But Mr. Fryer, though meaning well, and in some respects writing sensibly on this point, has not got hold of the principle of the matter quite. He thinks architectural character in ironwork is to be ensured by conforming to the details and style that have long been accepted as good in masonry design. "The principles of architecture," he says, "which have endured so long, will remain for ever, simply because they embody true taste and common sense, both of which the public have and understand." If the public in America have it, they are better off than the public in England; but, as Hamlet says to Polonius,—"Your news is not true." Mr. Fryer is quite correct in saying that the principles of architecture are those of common sense, and will remain for ever; but he seems to think "the principles of architecture" consist in certain forms, such as cornices, modillions, columns, &c. The said principles, on the contrary, consist in the effective treatment and ornamentation of material in the way best suited to its qualities and its manner of construction; and the author's specimen of an iron-fronted building (p. 81) is directly contrary to the principles of architecture. It is a sham altogether. Columns and pilasters of Classical proportions, and with elaborate foliated capitals, are used, and pedestals and panelling—all the details belonging to a masonic style, and having no affinity or relation with iron at all. He complains in one place that some persons call iron a sham, and that it is no more so than a stone front, which he calls a veneer front to a brick wall. But the stone front is built up with the brick wall and bonded to it, and partakes of the same construction; whereas Mr. Fryer's iron front is iron imitating stone in every point; a tensile material imitating a compressile material. His entire want of realisation of the problem is shown in other passages. Iron, he says, is "the best material for American street architecture," and on that point we will not undertake to contradict him here; it may or may not be; but he proceeds to say "whatever moulding is good in stone, for projection and general outline, is good in iron." The statement would have been much more like the truth if it had run "is *not* good in iron." Iron requires a totally distinct treatment from stone; a much lighter treatment, and one in which the putting together, the construction, is clearly shown. In his typical front the nature of the construction is entirely masked and falsified, and made to look as if built up instead of, as it really is, tied and bolted together. He shows in one place a drawing of a heavy cornice in iron, with the section of an Italian stone cornice, only a mere empty shell. Such a thing is simply an insufferable sham, one of the worst that could be made. The Corinthian capital stamped as a decoration on the back of the book is enough in itself to show how little Mr. Fryer is acquainted with the real nature of the problem before him. Such a capital, with its leaves cast and filed up separately and riveted on, is a piece of clumsy humbug in design, the only use of which is to provide something that will pass muster with the general public, and save the trouble of thinking how best to treat the material decoratively at that point, and at the same time suitably. The author inveighs against those who treat iron in such a merely utilitarian way, using it in thin and starved proportions. They may not do it artistically, but they are more likely to be in the right with a purely practical treatment, than Mr. Fryer with his iron front imitating a stone-built edifice. One of the reasons given for the superior suitability of iron fronts is that they can be painted so frequently, and are always, therefore, fresh and new and inviting, and that if a man has a "store" with a stone front next door to one with an iron front, the latter, with its annual spring coat of paint, will be much more attractive to customers than the stone front without paint, and in which presently every stone assumes a different tinge or colour; which seems to be thought very untidy in America. Indeed, one proprietor who rejoiced in a marble front had to give in, and have it painted, in order to keep pace with his neighbour of the iron front. Comment on this, as the papers say, "would be superfluous."

In short, Mr. Fryer unfurls the iron-founders' flag, though in a perfectly open and honest manner, and with an evident wish to fight well under that standard. But before he talked so much about architectural common-sense, he should have learned a little better in what it consisted, and what manner of constructive design is really suitable for the nature of iron. He speaks very feelingly in one place of the mischief which every building in bad taste or dishonestly designed exercises, more or less, in lowering the general public taste; but if he is building or putting up iron fronts, after the model illustrated in his pages, he himself is a far greater culprit in this way than he appears to be the least aware of.

## VARIORUM.

"THE Peasant's Home, 1760—1875" (Stanford, Charing-cross), is the title of an essay by Edward Smith, F.S.S., to which the Howard Medal was awarded by the Statistical Society. The author's personal attention to the subject seems to date from a very recent period, and the book is a mere compilation. Still it may be useful. —— "Handbook of Rural Sanitary Science," edited by Dr. Lory Marsh (Smith, Elder, & Co.), is, like the last-named work, the result of an offered premium for an essay, but of a much higher character. It includes the pith of four of the essays sent in. The editor thinks it may prove useful to justices of the peace, the clergy, sanitary officers, and others. So far as regards the justices and the clergy, we fully agree with him, read, and learn; but the sanitary officers who find and hope the classes in question will buy read, much that is new are scarcely fit for their position.——"He that overcometh" is the title of a clever tale, in two volumes, by Miss Fanny Aiken-Kortright, better known as the author of "The Dean," just now published by Remington & Co. The characters are clearly discriminated, and the story is full of incident and very interesting. Like all that Miss Kortright has written, it may safely be placed in any hands.——*Belgravia* is going ahead. A shilling number which includes a story by Chas. Reade, a poem by Algernon Swinburne, a serial story by Miss Braddon, and another by E. Lynn Linton, with illustrative engravings, and much other writing, must be pretty sure of a large circulation.

## Miscellanea.

**Freemasonry and Architecture.** — Mr. Emra Holmes, in "Notes on the Old Minute Books of the British Union Lodge, No. 114, Ipswich," in the *Masonic Magazine* for June, says:—"We have alluded to the introduction of operative masons into our order as testified in these records, and we are disposed to suggest that Grand Lodge, the Supreme Council 33°, and Grand Mark Lodge especially as being perhaps most nearly allied to operative masonry, should foster the study of architecture in every way. Why should they not, for instance, give a gold medal away every year to the writer of the best paper on architecture or archæology, or any kindred subject, or the best design for cathedral, church, castle, or mansion? Would it not be a good thing if operative masons were encouraged to join us by being admitted at a lower fee, and in the case of the A. and A. Rite we believe it would popularise that Rite and make it much more useful if all architects were given up to the 12th degree, that of Grand Master Architect, for a nominal fee on taking the usual obligation of allegiance to the S.G.C. 33°. Further we submit that such offices as Grand and Prov. Gr. Superintendent of Works in the Craft, and Grand Inspector of Works in the Mark Grand Lodge, should be confined exclusively to professional architects or civil engineers, or to such as have made architecture and archæology their peculiar study. We have known drapers appointed to such offices who did not know what archæology was. The restoration of churches and cathedrals and the preservation of castles and other places of historical interest ought to be a matter of the greatest possible interest to the three great Masonic bodies we have named; and Freemasons at large, if they are worthy of their descent, and believe at all in the traditions of the Order, should surely show as keen a delight in these records of the past,—these monuments of history,—as do the outer world, who are not Masons. But do they? That is the question."

**Discovery at Stoke-upon-Trent.**—A few days since an interesting relic was discovered in the churchyard of the parish church of Stoke-upon-Trent. In digging a grave on or near the site of the church which was taken down when the present modern church was erected, the workmen came upon what (according to the *Staffordshire Advertiser*) is to all appearance the shaft of a churchyard cross of the eleventh century. It is quadrangular in shape, and the ornamentation bears a general resemblance to that of several other Norman crosses still existing in the county. On one side is a plain treatment of a trefoil leaf and stalk, on another a chain ornament, on the third a guilloche, and on the fourth a "key pattern" of the simplest kind. The old church at Stoke had a round-headed chancel arch and other indications of a Norman church having once existed, but the chancel, at the time of the removal of the church, was Early English, and the nave and tower were of considerably later date. The shaft has been dressed to form a door lintel, and it may fairly be inferred, from the position in which it was found, that it once formed the lintel of a priests' door in the south wall of the chancel.

**"Fires in Cathedrals."**—Mr. Frederick S. Waller, architect and diocesan surveyor and surveyor to the Dean and Chapter of Gloucester, writes from Gloucester:—"I venture to ask space for a few lines to relieve anxiety as regards Gloucester Cathedral, and to show that there has been no neglect of duty on the part of the authorities here. In 1872 I adopted the same course that Mr. Ferguson had recourse to in 1874: I wrote to all the cathedral authorities, asking for information as to the means adopted by them to guard against the destructive effects of lightning. From nearly all replies were received. I submitted to the chapter a report upon the whole subject, and, after much consideration devoted to it, the following costly works were at once ordered and carried into effect:—1. The whole of the cathedral was protected by lightning conductors, on the same system as that used in her Majesty's Navy. 2. Water-pipes of ample dimensions, with hydrants at intervals of 110 ft., were laid all round the building, connected with the largest main from the city works; and many other safeguards were adopted in this cathedral. ——The Dean and Chapter of Winchester, with a view to protect the cathedral in case of fire occurring, are about to place a tank, containing 1,000 gallons of water, on the top of the building.

**Penny Banks and Thrift.**—A meeting was held on the 20th ult. at the Belle-isle Mission-hall, Metropolitan Cattle Market, in order to further the establishment of a branch of the National Penny Bank (Limited) in that neighbourhood. Mr. George C. T. Bartley (general manager of the bank) having explained the principles of the institution, the Right Hon. C. E. Childers, M.P., who occupied the chair, said that as one of the trustees of the bank, and as one who took an active and lively interest in the success of the undertaking, he certainly hoped to see very shortly a flourishing branch of the establishment at work in the vicinity. He thought that those persons who had the welfare of the country at heart could do nothing better than encourage thrift, especially among the working classes. Thrift should be encouraged from one end of the land to the other, and he thought that the bank of which he was speaking gave great facilities for the cultivation of those habits of thrift on which the future of the country so much depended.

**The Employers and Workmen Act.**—At the Lambeth Police Court, last week, a bricklayer named Steer, who was accompanied by a dozen fellow-workmen, waited on Mr. Chance and raised a point of some importance under the Employers and Workmen Act. He wished to know whether, when men were kept waiting for their money, they were not entitled to pay for an hour's time. They left off work at one o'clock on Saturday, and were not paid until half-past two o'clock. Mr. Chance was of opinion that if workmen gave notice that they should expect to be paid for waiting after a specified time, he should be disposed to grant a summons. If, however, after notice, a master declared that he would not be bound by such a notice, and men kept in his employ, there would be no remedy. Steer thanked the magistrate. The matter was of interest to workmen generally, as they were frequently kept waiting beyond a reasonable time for their money on pay-days.

**The Thames Toll Bridges.**—At a meeting of the Richmond Select Vestry, on the 20th ult., some discussion took place with reference to the Toll Bridges (River Thames) Bill, the vestry having at a previous meeting resolved to oppose the Bill as it originally stood. Mr. E. C. Dermer stated that he had some conversation with Mr. Alderman M'Arthur, the promoter of the Bill, and the latter expressed his willingness that the Metropolitan Board of Works should pay the compensation for taking to the bridges, and that the counties of Middlesex and Surrey should make an annual payment. The subject was brought up at a meeting of the County Finance Committee of Surrey last week, at which Mr. Cubitt, Sir H. Peek, Sir Trevor Lawrence, and others, were present, and it was then thought that the proposal of Alderman M'Arthur would be exceedingly acceptable to the county.

**Short Time at the Crewe Engine Works.**—A Manchester paper announces that, commencing with this week, the whole of the men employed in the great locomotive works of the London and North-Western Railway Company at Crewe, to the number of 7,000, have been put upon short time. This means that the men will leave their work on Friday night, and not resume it till breakfast-hour on Monday, making only five days. This has resulted from three causes:—1. A decision in the Court of Chancery restraining the London and North-Western Company from making engines for other companies; 2. The introduction of superior machinery by the chief engineer, Mr. Webb; and 3. By the depression in trade.

**The Arundel Society.**—During 1875 the financial prosperity of this society, which seemed to have met with a slight temporary check in the preceding year was, according to the annual report just now published, fully restored. The gross receipts amounted to 7,187*l.*, a total which exceeds that of 1874 by more than 1,000*l.*, and is only surpassed by that of 1872, a year which had before been noted as exceptional in the society's history. The increase of income last year was accompanied by a more than equivalent increase of expenditure; but this, when explained, is no cause for dissatisfaction.

**Art Exhibition at Southampton.**—The annual exhibition of works of art at the Hartley Institution, Southampton, was opened on the 20th ult. The exhibition comprises about 800 examples of high-class painting in oil and water colours, drawings, etchings, &c., and a selection of objects from South Kensington Museum.

**Technical Education of Bricklayers.**—A second meeting in furtherance of the social as well as trade condition of bricklayers was held on the 21st ult. at the Artisans' Institute, St. Martin's-lane. After the committee appointed at the last meeting had presented their report, a permanent committee of ten bricklayers was appointed, and it was arranged that a class for technical instruction should at once be formed, and twenty-eight men from the body of the meeting handed in their names as students, and paid their entrance fee of 1s. each.

**Architect to the North-Eastern Company.**—Mr. William Peachey, architect, of Darlington, has been appointed successor to the late Mr. Burleigh in the post of architect to the North-Eastern Railway Company. Mr. Peachey has been for twenty years architect for the Stockton and Darlington Railway Company, including the period during which that company's district has been part of the North-Eastern system. The appointment will necessitate the removal of Mr. Peachey to York.

**Fatal Fall of a Building in Sheffield.**—On the 22nd ult. an accident, involving loss of life and great damage to property, happened at the South Yorkshire Steel and Iron Works of Andrew S. Burrows & Co., Pothouse-lane, Attercliffe, Sheffield. Without any warning the lofty and heavy wall dividing the steel warehouse and the rail-mill fell, killing George Smith (33) on the spot, and injuring another. Mr. Burrows narrowly escaped.

**Ebury-square.**—The Duke of Westminster has asked the Board of Works to take upon lease from his Grace the ornamental garden known as Ebury-square, Buckingham Palace-road, Pimlico, to be thrown open to the public in the day-time throughout the year, the Board paying the expense of the police, and of maintaining the garden and the railing.

**Tamworth School Board.**—The designs of Messrs. R. J. & J. Goodacre, architects, of Leicester, have been selected, in a limited competition, for the above schools. The other competitors were Messrs. Giles & Brookhouse, of Derby, and Mr. Basil Champneys, of London. The schools are intended to accommodate 800 children.

**Hogg's Ventilating Company.**—The system worked out by this company for ventilating dwellings and other buildings seems very well calculated to be effective, and we have no hesitation in advising such of our readers as really desire to have properly-ventilated houses to apply to the Company for assistance.

**Statue of Tyndale.**—The Board of Works has granted the use of a site in the garden of the Victoria Embankment for a monument to William Tyndale. The design for the monument will be submitted to the Board for their approval.

**The Paris Exhibition, 1878.**—It is proposed to fix the sum to be subscribed by the City of Paris towards the fund for the Exhibition of 1878 at 200,000*l.*

## TENDERS

For proposed vestry-hall and offices, for the parish of St. John, Hampstead, with Portland cement dressings. Quantities by Mr. Abbott. Messrs. Kendall & Mew, architects:—

| | | Bath stone dressings extra. | Portland stone dressings. |
|---|---|---|---|
| Beach Brothers ... | £11,822 ... | £1,829 ... | £2,439 |
| Carter ... | 10,270 ... | 1,170 ... | 1,970 |
| Manley & Rogers | 10,130 ... | 2,070 ... | 2,970 |
| Ennor ... | 9,807 ... | 1,930 ... | 2,840 |
| Tyerman ... | 9,570 ... | 1,264 ... | 2,552 |
| Burford ... | 9,472 ... | 979 ... | 1,745 |
| Temple & Foster ... | 9,048 ... | 1,057 ... | 2,169 |
| Crockett ... | 8,999 ... | 1,484 ... | 2,026 |
| Garrud ... | 8,990 ... | 1,300 ... | 3,350 |
| Hunt ... | 8,508 ... | 1,755 ... | 2,517 |
| Shepherd ... | 8,500 ... | 1,100 ... | 1,900 |

For mortuary, fence walls, &c., to public recreation ground, for the parish of St. George-in-the-East. (First contract.) Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

| | |
|---|---|
| Hearle ... | £1,335 0 0 |
| Ennor ... | 1,311 0 0 |
| Palmer ... | 1,268 0 0 |
| Manning & Dowdney (accepted) | 1,250 0 0 |

For rebuilding the Roebuck public-house, Cannon-street-road, E. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

| | |
|---|---|
| Grimwood ... | £3,373 0 0 |
| Coleman ... | 3,224 0 0 |
| Palmer ... | 3,175 0 0 |
| Ennor ... | 3,079 0 0 |
| Bennett ... | 2,998 0 0 |
| Manning & Dowdney (accepted) | 2,930 0 0 |

For Cinderford drainage. Messrs. Gotto & Beesley, engineers:—

| | |
|---|---|
| Brock & Bruce ... | £8,035 0 0 |
| Coleman Bros. ... | 7,438 0 0 |
| King ... | 7,000 0 0 |
| Flewitt & Henderson ... | 6,700 0 0 |
| Cowdery & Son ... | 5,733 0 0 |
| Dickson (accepted) ... | 5,675 0 0 |
| Marfell ... | 5,543 0 0 |

For alterations and decorations, Sydenham. Mr. Robert J. Worley, architect:—

| | Decorations. | Billiard-room, &c. |
|---|---|---|
| Land ... | £130 12 6 ... | £849 17 0 |
| Howe ... | 94 0 0 ... | 535 0 0 |
| Smith ... | 98 0 0 ... | 429 0 0 |
| Vincent ... | 94 0 0 ... | 406 0 0 |

For rebuilding the Castle tavern, Moorgate, for Mr. T. Norton. Mr. R. Roberts, architect:—

| | |
|---|---|
| Coleman ... | £5,835 0 0 |
| Kiddle & Son ... | 5,799 0 0 |
| Ashby & Horner ... | 5,763 0 0 |
| Rider & Son ... | 5,687 0 0 |
| Hart ... | 5,584 0 0 |
| Perry ... | 5,535 0 0 |
| Newman & Mann ... | 5,529 0 0 |

For two studios, Stanley Gardens, England-lane, South Hampstead, for Mr. Auguste Ballin. Messrs. Batterbury & Huxley, architects. Quantities supplied:—

| | |
|---|---|
| Warne ... | £1,155 0 0 |
| King (accepted) ... | 1,100 0 0 |

For the enlargement of Grayshott-road chapel, Batterses. Mr. A. J. Rouse, architect. Quantities supplied:—

| | |
|---|---|
| Wilde ... | £1,433 0 0 |
| Bland ... | 1,384 0 0 |
| R. & E. Smith ... | 1,321 0 0 |
| Grieve & Littlejohns ... | 1,250 0 0 |
| Moy & Giles ... | 1,200 0 0 |
| Tull ... | 1,165 0 0 |
| Hobern ... | 1,160 0 0 |
| Jopling & Co. ... | 1,149 0 0 |
| National Co-operative and Contractors' Society, Limited ... | 1,100 0 0 |
| Lose ... | 1,055 0 0 |
| Hocking (accepted) ... | 1,040 0 0 |

For the erection of cottages in the Boston-road, Walthamstow, for Mr. J. Coningsby:—

| | |
|---|---|
| Thomason (accepted) ... | £200 0 0 |

For new roof and ceiling, painting, and sundry work, at the Queen's Arms, Hackney-road, for Mr. B. Phillips. Mr. H. W. Budd, architect:—

| | |
|---|---|
| Thomason (accepted) ... | £168 10 0 |

For additions to the stores at the Bethnal-green Industrial Schools, Leytonstone, for the Guardians of St. Matthew, Bethnal-green. Mr. W. Munday, architect:—

| | |
|---|---|
| Stamp & Bowtle ... | £119 10 0 |
| Taylor ... | 116 10 0 |
| Wire ... | 109 12 0 |
| Judd & Hawkings ... | 103 11 0 |
| Arber ... | 98 0 0 |
| Thomason (accepted) ... | 97 10 0 |

For enlarging chancel of St. James's Church, Hampton Hill, for Rev. J. F. Fitz Wygram, M.A. Mr. W. Wigginton, architect:—

| | |
|---|---|
| Falkner (accepted) ... | £630 0 0 |

For St. Barnabas Parsonage, Grove-road, Bow, for Rev. Mr. Barnes. Mr. W. Wigginton, architect:—

| | |
|---|---|
| Falkner (accepted) ... | £1,849 0 0 |

For Lewes Skating Rink (exclusive of iron roof and asphalte floor):—

| | |
|---|---|
| Harman ... | £498 0 0 |
| Cheeseman & Co. (accepted) ... | 478 0 0 |
| Steer ... | 465 0 0 |

For the erection of a villa residence, at Finchley, for Mr. Albert Saunders. Quantities by Messrs. Rogers & Vining. Mr. Walter Graves, architect:—

| | |
|---|---|
| Cooper (accepted) ... | £2,340 0 0 |

For erecting additions to surgery, &c., to Westbury House, Willesden, for Dr. H. Branthwaite. Mr. Walter Graves, architect:—

| | |
|---|---|
| Tilbury (accepted) ... | £144 0 0 |

For erecting additions to "Ellerslie," Nicol-road, Willesden, for Mr. Wm. Burgess. Mr. Walter Graves, architect:—

Horne (accepted).

For rebuilding a warehouse, Wood-street, City. Messrs. Ford & Hesketh, architects:—

| | |
|---|---|
| McLachlan & Son ... | £5,291 0 0 |
| Adamson & Son ... | 4,941 0 0 |
| Perry & Co. ... | 4,917 0 0 |
| Kirk & Randall ... | 4,884 0 0 |
| Ashby Bros. ... | 4,871 0 0 |
| Peto Bros. ... | 4,858 0 0 |
| Downs & Co. ... | 4,817 0 0 |
| Browne & Robinson ... | 4,719 0 0 |
| Brass ... | 4,687 0 0 |
| Newman & Mann (accepted) ... | 4,536 0 0 |

For the erection of villa residence, at Fairfield-road, Chesterfield, for Mr. H. Slack. Messrs. Rollinson & Son, architects:—

| | |
|---|---|
| Pattinson & Co. ... | £1,499 0 0 |
| Hoole & Handby ... | 1,390 0 0 |
| Madin ... | 1,342 10 0 |
| Slim ... | 1,342 0 0 |
| Greenwood ... | 1,281 0 0 |
| Forrest (accepted) ... | 1,280 0 0 |

For residence in Corporation-street, Chesterfield, for Mr. J. Carnegie. Messrs. Rollinson & Son, architects:—

| | |
|---|---|
| Forrest ... | £2,933 0 0 |
| Tutin ... | 2,917 0 0 |
| Marriott ... | 2,760 0 0 |
| Wright & Madin ... | 2,687 0 0 |
| Slim ... | 2,586 0 0 |
| Wright ... | 2,580 0 0 |
| Greenwood ... | 2,578 0 0 |
| Saul (accepted) ... | 2,540 0 0 |

For main drainage works, Bolsover and Pilsley (Derbyshire), for the R. S. Authority of Chesterfield Union district. Messrs. Rollinson & Son, engineers:—

| Bolsover. | | Pilsley. | |
|---|---|---|---|
| Stevenson..... £1,713 | ... | Pallinson & Co. | £640 |
| Pallinson & Co. 1,570 | ... | Barber & Miles | 558 |
| Barber & Miles* 1,520 | ... | Stevenson*..... | 550 |

*Accepted.

For new hall for the Carpenters' Company. Mr. W. W. Pocock, architect. Quantities by Messrs. Thomas Chamberlain & S. B. Wilson:—

| | | | |
|---|---|---|---|
| Ashby Brothers | £32,879 | 0 | 0 |
| Killby | 32,547 | 0 | 0 |
| Willson Brothers | 32,279 | 0 | 0 |
| Fish | 32,200 | 0 | 0 |
| Patrick & Son | 31,200 | 0 | 0 |
| Browne & Robinson | 29,997 | 0 | 0 |
| Morter | 29,923 | 0 | 0 |
| Perry & Co. | 29,453 | 0 | 0 |
| Brass (accepted) | 28,992 | 0 | 0 |

For new stabling, &c., for the Lewisham District Board of Works. Mr. John Carline, engineer. Quantities by Messrs. Selby & Rogers:—

| | | | |
|---|---|---|---|
| Major | £3,328 | 0 | 0 |
| Burchell | 3,193 | 0 | 0 |
| Amer | 3,170 | 0 | 0 |
| Payne & Balding | 2,867 | 0 | 0 |
| Thomas | 2,700 | 0 | 0 |
| Mowlem & Co. | 2,700 | 0 | 0 |
| Rider & Son | 2,428 | 0 | 0 |

For repairs to the exterior of St. Jude's Church, Whitechapel. Mr. W. A. Longmore, architect:—

| | | | |
|---|---|---|---|
| Read & Son | £368 | 0 | 0 |
| Killby | 265 | 0 | 0 |
| Jacobs (accepted) | 252 | 0 | 0 |

For rebuilding premises, 67A, Bishopsgate-street, for Mr. Gibson. Mr. G. Fowler, architect:—

| | | | |
|---|---|---|---|
| Wells | £2,765 | 0 | 0 |
| Borrows | 2,732 | 0 | 0 |
| Barlow & Co. | 2,730 | 0 | 0 |
| Sharp & Co. (accepted) | 2,726 | 0 | 0 |
| Miter | 2,400 | 0 | 0 |
| Pritchard | 2,330 | 0 | 0 |

For rebuilding house, St. John's-square, Clerkenwell. Mr. E. Norman Shaw, architect:—

| | | | |
|---|---|---|---|
| Ryder & Son | £1,568 | 0 | 0 |
| Cooper | 1,550 | 0 | 0 |
| Lascelles | 1,450 | 0 | 0 |
| Braid & Co. (accepted) | 1,390 | 0 | 0 |

For residence at Mill Hill, for Mr. W. Austin. Mr. E. Norman Shaw, architect. Quantities by Messrs. Franklin & Andrews:—

| | | | |
|---|---|---|---|
| Hill & Higgs | £4,840 | 0 | 0 |
| McLachlan | 4,485 | 0 | 0 |
| Jarrett | 4,445 | 0 | 0 |
| Lascelles | 4,350 | 0 | 0 |
| Tyerman | 4,343 | 0 | 0 |
| Braid & Co. | 4,250 | 0 | 0 |
| Brass | 4,078 | 0 | 0 |

For rebuilding Nos. 2 and 3, Tothill-street, Westminster. Mr. John Groom, architect:—

| | | | |
|---|---|---|---|
| Allen | £2,106 | 0 | 0 |
| Braid & Co. | 2,100 | 0 | 0 |
| Heath | 2,054 | 0 | 0 |
| Gough | 1,998 | 0 | 0 |
| Mansell & Charlton | 1,989 | 0 | 0 |
| Crabb | 1,918 | 0 | 0 |
| Long | 1,905 | 0 | 0 |
| Wagner | 1,630 | 0 | 0 |

For a mansion, Chislehurst, Kent, for Mr. G. Emmett. Mr. Peak, architect. Quantities by Mr. W. T. Glan:—

| | | | |
|---|---|---|---|
| Broker | £7,970 | 0 | 0 |
| Rivers & Co. | 7,890 | 0 | 0 |
| Meman & Co. | 7,847 | 0 | 0 |
| Sharp & Co. (accepted) | 7,843 | 0 | 0 |

For the erection of nine cottages, at Flint, for Mr. Robert Hughes, Coleshill, Flint:—

| | | | |
|---|---|---|---|
| Lloyd | £1,143 | 0 | 0 |
| Williams | 1,083 | 12 | 0 |
| Lloyd | 1,045 | 0 | 0 |
| Williams & Bevan | 1,008 | 9 | 7 |
| T. H. Evans | 998 | 0 | 0 |
| Astbury | 967 | 10 | 0 |
| J. Evans (accepted) | 954 | 13 | 6 |

For alterations and repairs at the Britannia tavern, Mare-street, Hackney, for Mr. Finch. Edward Brown, architect:—

| | | | |
|---|---|---|---|
| Stamp & Bowtle | £7 7 | 0 | 0 |
| Marr | 724 | 0 | 0 |
| Salt (accepted) | 655 | 0 | 0 |

For alterations at the Lock and Key, West Smithfield, for Mr. H. Walker. Mr. Edward Brown, architect:—

| | | | |
|---|---|---|---|
| Heeps | £228 | 0 | 0 |
| Lister (accepted) | 219 | 0 | 0 |

*Warehouse, Croydon.*—Instead of "Kingland" (p. 602), read "Ridge & Kingsland."

*Asphalt Paving.*—The tender of the Brunswick Rock Asphalt Paving Company has been accepted for paving both warehouse floors, Orchard Wharf, Blackwall, for Messrs. Hyatt, Devitt, & Parker, for about £295. Also for paving the floors of the new warehouse for Messrs. E. Rimmel & Co., Beaufort-buildings, Strand.

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